



EDITORIAL TEAM**Journal of Community Empowerment for Health****Editor in Chief:**

dr. Widyandana, MHPE, Ph.D., Sp.M. (Universitas Gadjah Mada, Yogyakarta, Indonesia)

Associate Editor:

dr. Hanggoro Tri Rinonce, Sp.PA(K), Ph.D. (Universitas Gadjah Mada, Yogyakarta, Indonesia)

Editorial Board:

dr. Gunadi, Ph.D., Sp.BA. (Universitas Gadjah Mada, Yogyakarta, Indonesia)
dr. Muhammad Nurhadi Rahman, Sp.OG (Universitas Gadjah Mada, Yogyakarta, Indonesia)
Harry Freitag Luglio Muhammad, S.Gz., M.Sc., RD (Universitas Gadjah Mada, Yogyakarta, Indonesia)
Prof. Dr. dr. Tri Nur Kristina, DMM, M.Kes. (Universitas Diponegoro, Semarang, Indonesia)
Dr. dr. Eti Poncorini Pamungkasari, M.Pd. (Universitas Negeri Sebelas Maret, Surakarta, Indonesia)
dr. Diantha Soemantri, M.Med.Ed, Ph.D. (Universitas Indonesia, Jakarta, Indonesia)
Dr. dr. Meita Dhamayanti, Sp.A(K). (Universitas Padjajaran, Bandung, Indonesia)
dr. Rina Agustina, M.Sc., Ph.D. (Universitas Indonesia, Jakarta, Indonesia)

Peer Reviewer:

Dr. Supriyati, S.Sos., M.Kes. (Universitas Gadjah Mada, Yogyakarta, Indonesia)
Prof. Dr. dr. Hari Kusnanto, SU. (Universitas Gadjah Mada, Yogyakarta, Indonesia)
dr. Sri Awalia Febriana, M.Kes., Sp.KK, Ph.D. (Universitas Gadjah Mada, Yogyakarta, Indonesia)
dr. Fatwa Sari Tetra Dewi, MPH., Ph.D. (Universitas Gadjah Mada, Yogyakarta, Indonesia)
Sri Warsini, S.Kep., Ns., M.Kes., Ph.D. (Universitas Gadjah Mada, Yogyakarta, Indonesia)
drg. Lisdrianto Hanindriyo, MPH., Ph.D. (Universitas Gadjah Mada, Yogyakarta, Indonesia)
Dr. Dra. Shrimarti Rukmini Devy, M.Kes. (Universitas Airlangga, Surabaya, Indonesia)
dr. Umatul Khoiriyah, M.Med.Ed., Ph.D. (Universitas Islam Indonesia, Yogyakarta, Indonesia)
Dr. dr. Aria Kekalih, M.Si. (Universitas Indonesia, Jakarta, Indonesia)
Dr. Esti Nugraheny, SST, M.Kes. (Akbid Ummi Khasanah, Yogyakarta, Indonesia)
dr. Yodi Cristiani, MPH, Ph.D. (Credos Institute, Jakarta, Indonesia)
Dr. Yoga Pamungkas Susani, MD, M.Med.Ed. (Universitas Mataram, Mataram, Indonesia)
Tantut Susanto, S.Kep., Ns., M.Kep., Sp.Kom., Ph.D. (Universitas Negeri Jember, Jember, Indonesia)
Agianto, S.Kep., Ns., M.NS, Ph.D. (Universitas Lambung Mangkurat, Banjarmasin, Indonesia)
Dr. Susi Ari Kristina, M.Kes., Apt. (Universitas Gadjah Mada, Yogyakarta, Indonesia)
Uki Noviana, S.Kep., Ns., M.NSc., Ph.D. (Universitas Gadjah Mada, Yogyakarta, Indonesia)
dr. Rachmadya Nur Hidayah, M.Sc., Ph.D. (Universitas Gadjah Mada, Yogyakarta, Indonesia)
dr. Anggoro Budi Hartopo, M.Sc., Ph.D., Sp.PD, Sp.JP. (Universitas Gadjah Mada, Yogyakarta, Indonesia)
dr. Indra Tri Mahayana, Ph.D., Sp.M. (Universitas Gadjah Mada, Yogyakarta, Indonesia)
Tony Arjuna, M.Nut.Diet., Ph.D., AN., APD. (Universitas Gadjah Mada, Yogyakarta, Indonesia)
Galang Lufityanto, S.Psi., M.Psi., Ph.D. (Universitas Gadjah Mada, Yogyakarta, Indonesia)
Dr. dr. Rizma Adlia Syakurah, MARS. (Universitas Sriwijaya, Palembang, Indonesia)

Table of Contents

Volume 5(3) December 2022

ORIGINAL RESEARCH ARTICLES

- 159-166 Assessing the acceptability of the health education program in Dengue prevention and control in Buon Ma Thuot city in Dak Lak province, Vietnam
Pham Huong Giang, Riris Andono Ahmad, Raden Ajeng Yayi Suryo Prabandari
- 167-174 COVID-19 and health behaviors of the vulnerable group in the disaster-prone area: a case study of volcano-prone Merapi, Indonesia
Diah Setyawati Dewanti, Romi Bhakti Hartarto
- 175-181 Young father-child relationship pattern and nutrition status among under-five children in Jember Regency, Indonesia
Ubaidillah Ustman, Tantut Susanto, Hany Rasni, Nuning Dwi Merina, Fahrudin Kurdi
- 182-190 Development of an emergency volunteer-based call center for COVID-19 within the university setting
Hayu Qaimamunazzala
- 191-201 Cultural perceptions of child abuse in terms of parents' perspective: A qualitative study in Bandung-Indonesia
Reizkiana Feva Kosmah Dewi, Sri Endah Rahayuningsih, Viramitha Kusnandi Rusmil, Eddy Fadlyana, Kuswandewi Mutyara, Nita Arisanti, Nanan Sekarwana, Meita Dhamayanti
- 202-211 Reducing symptoms severity in patients with COVID-19 and post COVID-19 patients using the Sujok Tririgin Therapy (STT) through community empowerment
Ade Sutrimo, Intansari Nurjannah, Deddy Nur Wachid Achadiono, Janatin Hastuti, Azam David Saifullah, Ina Laela Abdillah, Rafialdo Arifian, Nabila Putri Irenda, Ajeng Wita Astri Devica Puri, Wulan Fitrianingrum, Pius Bonaventura Ado, and Indah Fajar Destantika
- 212-217 Implementation of the SMart-Punakawan COVID-19: Empowering communities and families against COVID-19
Eti Poncorini Pamungkasari, Bulan Kakanita Hermasari, Sri Anggarini Parwatiningsih, Sri Mulyani, Hartono, Lely Tri Pangesti
- 218-227 Evaluation of community empowerment program for elderly care: Lessons learned from PUSAKA Wahyu Teratai
Syamsumin Kurnia Dewi

228-234 Empowering universities through the Health Promoting University program for tackling non-communicable diseases

Supriyati Supriyati, Riskiyana Sukandhi Putra, and Yayi Suryo Prabandari

235-239 Community Collage Service (KKN) student assistance to improve women's health by detecting breast cancer and cervical cancer in Amansari Village, Karawang Regency

Dini Widianti, Rita Komalasari

Assessing the acceptability of the health education program in Dengue prevention and control in Buon Ma Thuot city in Dak Lak province, Vietnam

Pham Huong Giang,^{1,2} Riris Andono Ahmad,³ Raden Ajeng Yai Suryo Prabandari⁴

¹ Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

² Institute of Development Policy, University of Antwerp, Antwerp, Belgium

³ Department of Biostatistics, Epidemiology and Population Health, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

⁴ Department of Health Behavior, Environment, and Social Medicine Department, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

SUBMITTED: 7 June 2021

REVISED: 22 November 2022

ACCEPTED: 28 November 2022

KEYWORDS

Acceptability
Dak Lak
Dengue fever
Dengue prevention
and control
Vietnam

ABSTRACT Dengue fever is a serious human arboviral infection that globally spreads and is a top concern amongst health care professionals and governments including Vietnam. The best measure to prevent and control dengue is vector control which is supported by social mobilization and health education. This study assessed the acceptability of health education programs in dengue fever prevention and control for the first time in Dak Lak Province, which is located in the endemic area of dengue fever in Vietnam. This study was an implementation research with qualitative methods. Nine in-depth interviews and six focus group discussions involving thirty-four informants were conducted at province, district, and ward levels. The acceptability was analyzed based on the seven components of the Theoretical Framework of Acceptability. Thirty-four informants ranging from ages 26 to 54 years participated. All belonged to the delivering or receiving groups of the health education program. The years of experience of the delivering group were at least two years with the health education program in dengue prevention and control and all individuals in the receiving group participated in the program. Six components, namely affective attitude, perceived effectiveness, intervention coherence, ethicality, and self-efficacy, were coded in all transcripts. Meanwhile, none of the interviews mentioned the opportunity cost. Overall, the acceptability of the health education program in dengue fever prevention and control was considered to be positive. However, the transformation from education to behavior requires time for acceptance and the persistence of the education program. Besides, the major burden of the program was the limited budget that could lead to inadequate facilities for indirect communication and low human resources.

© The Journal 2022. This article is distributed under a [Creative Commons Attribution-ShareAlike 4.0 International license](https://creativecommons.org/licenses/by-sa/4.0/).

1. Introduction

Dengue fever is a serious human arboviral infection that globally spreads and is a top concern amongst healthcare professionals and governments including Vietnam. The best measure to prevent and control dengue is vector control which is supported by social mobilization and health education. According to the World Health Organization (WHO), health

education is defined as “constructed communication of knowledge to improve health literacy and improve skills in order to advance individual and community health”.¹ The “health education for dengue prevention and control”, hereafter referred to as the health education program, in Vietnam is a routine program provided in the community through speakers, posters, pamphlets by health collaborators, health workers and in schools through meetings by health educators.²

To be more specific, health collaborators and health workers are responsible for the door-to-door visits to provide risk communication and to distribute pamphlets. They are also in charge of giving

*Correspondence: phamhuonggiang@mail.ugm.ac.id
Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Jl. Farmako, Sekip Utara, Yogyakarta 55281, Indonesia (Postal address: 365 Ottergensseesteenweg, 9000 Gent, Belgium).

Table 1. Component of Theoretical Framework of Acceptability (TFA).

| Theoretical Framework of Acceptability | Code frequency | No. of interviews with codes |
|--|----------------|------------------------------|
| Perceived effectiveness | 45 | 15 |
| Burden | 43 | 15 |
| Intervention coherence | 40 | 15 |
| Ethicality | 34 | 15 |
| Self-efficacy | 33 | 15 |
| Affective attitude | 28 | 15 |

information regarding dengue prevention and control plans and measures to the community through speakers or by facilitating neighborhood meetings. At schools, health education on dengue was organized, aiming to provide information concerning causes, symptoms, and effective prevention measures such as cleaning water containers, following the Vietnamese Ministry of Health (MOH) recommendations for environmental management.

Dak Lak is a mountain province in Central Highlands region, Vietnam which has a history of outbreaks of dengue fever (DF) and is an endemic area with all four DENV serotypes co-circulating.^{3,4} Among 15 main administrative units in Dak Lak province, Buon Ma Thuot city is the most populous city in Dak Lak province with the highest prevalence of DF of 1.56%.⁵

However, there was no research had been done to assess the acceptability of health education program in DF prevention and control while this is a routine program and has been implemented for years. Thus, here we explored the input, process, and acceptability of the current health education for dengue prevention and control to address this gap, as well as to plan for more effective health education.

2. Methods

The study involved implementation research which was conducted with qualitative methods that included the participation of the community (i.e. representatives of People's Committee - PC, school - SC, and household - HH) and health staff (i.e. representatives of the Center for Disease Control - CDC, district health center - DHC, commune health centers - CHC, and health collaborators - HC) to access their experiences of the acceptability of

the current health education in DF prevention and control. The purposeful sampling specific for the criterion sampling mentioned below for qualitative research was adopted in this study.

The study subjects were: (1) Responsible person in the CDC dengue prevention and control programs of Dak Lak province and Buon Ma Thuot City Health Center; (2) Head of ward/commune health station (3) Ward/commune health staffs or collaborators: who were being involved in the health education program in DF; (4) Vice-chairman who is responsible for the health education work in DF of ward/commune People's Committee; (5) A representative from school who is a responsible person in health education of dengue prevention and control; and (6) Householders who are living in the research area and received the health education intervention of DF. They are the ones with a range of past experiences with dengue (some with dengue infections in their family, and others without).

Semi-structured in-depth interviews (IDIs) and focus-group discussion (FGD) guidelines were developed to collect information. The guidelines were adapted and modified from the pilot research of Murphy et al. in 2019 on Theoretical Framework of Acceptability (TFA).⁶ The length of each IDI was around 35-40 minutes while FGDs lasted for about 55-60 minutes. The IDIs and FGDs were conducted and supervised by the principal investigator of the study.

The research assistant was the person who currently works in the health system in Buon Ma Thuot city, Dak Lak province, with experience in public health research. The language of the interview was Vietnamese. The interviews were conducted with health staff, in the order from provincial to commune levels, prior to the community. Triangulation of

sources was applied in this study by comparing answers from different informant groups and making observations of the surrounding environment of households. Nine in-depth interviews and six focus group discussions involving thirty-four informants were conducted at the province, district, and ward levels in April 2021. The IDIs and FGDs have reached information saturation.

2.1. Ethical approval

Permission for the study was obtained from both Hanoi University of Public Health's (No. 021-092/DD-YTCC) and Universitas Gadjah Mada's Medical and Health Research Ethics Committee (No: KE/FK/0175/EC/2021). Informed consent was obtained from all participants in written form before data collection in the qualitative study.

2.2. Analysis

Directed content analysis with deductive coding was used for qualitative analysis.⁷ All discussions were recorded and transcribed verbatim in Microsoft Word documents. Half of the transcripts were done with support from an additional research assistant, who currently works in the health system with two years' experience in public health. The principal investigator of the study was in charge of analyzing, coding and categorizing data. The coding was then reviewed conscientiously to ensure the quality of the data. Only the quotations shown as illustrations for the findings were translated into English.

3. Results

Thirty-four informants ranging from ages 26 to 54 years participated. All belonged to the delivering or receiving groups of the health education program. The years of experience of the delivering group were at least two years with the health education program in dengue prevention and control and all individuals in the receiving group participated in the program.

Based on Table 1 the TFA could be classified into 6 different components: namely affective attitude, perceived effectiveness, intervention coherence, ethicality, and self-efficacy, which were coded in all transcripts. Meanwhile, none of the interviews

mentioned the opportunity cost. The summary of the study results is provided in Table 2.

4. Discussion

In general, the groups of health staff, health collaborators, teachers responsible for health education at schools, and households answered that they have a positive feeling and appreciate the effectiveness of the health education program. This could be explained by the fact that the health staff/collaborators and teachers have communicated with the community and pupils over many years so that they have built good relationships with these communication receivers. Therefore, the health staff/collaborators and teachers could easily approach the community and pupils and ensure the delivery of the health education program. One study indicated that the pre-existing relationships between health program deliverers and receivers would influence the overall impression and willingness to participate in the program of deliverers.⁶

Similarly, some studies suggested that the truthful relationship between the deliverer and receiver is crucial to facilitate the acceptability of health interventions.^{8,9} It was also noted that the negative relationship could be a barrier in delivering health intervention.⁹ Some of the Peoples' Committee staff showed neutral feelings about the health education program. This might be associated with their role in the program since they were only responsible for preparing broadcasts based on content prepared by their health department counterparts.

Another interesting point was that the direct communication (door-to-door visit) which complemented the indirect communication (speakers and posters) could enhance the effectiveness of the communication among the community. The households shared that the visits of health staff/collaborators made them feel cared for and motivated them to practice preventive measures. Door-to-door visiting was found to significantly increase knowledge of the community in dengue prevention.¹⁰ A case study in community engagement in dengue prevention and control in urban areas of Vietnam showed that the direct consultation is the most effective approach in communication.¹¹ In addition,

Table 2. Summary of study results.

| TFA constructs | Results | Illustrative quotes |
|--------------------|---|--|
| Affective attitude | Positive feeling about the health education program. | <p>“When we [health staff] communicate about dengue fever and malaria, the public is very pleased, and they thank us. These occasions (communication sessions) make them happy.” (HC1)</p> <p>“Of course, it is very good to prevent dengue for the pupils, and they are very excited ... The second thing is to broadcast about dengue during breaks. Therefore, I am very excited, truly.” (SC1)</p> |
| | Increase public awareness on dengue fever. | “... the communication in dengue prevention ... raises the public awareness. If we [health staff] come to ask the public now about dengue fever, they would know very well.” (CDC2) |
| | The practice of the community was considered low by interview health staff. | “...about the eradication of dengue’s larvae, we [health staff] have been guiding the public everywhere we go, but they still leave the water containers uncovered, leading to the increase of larvae and thus dengue fever.” (CHC1) |
| Burden | Lack of funding was considered as a common burden of the program, leading to inadequate facilities for indirect communication at commune health center, people committee and school (e.g., loudspeakers, mobile vehicle, pamphlets, and posters). | <p>“Previously, the collaborators of the communication program in dengue received an allowance, but now the program has no such specific collaborators. The program used to be done in a commune, but it stops now. There are only health collaborators who have general responsibility and work for all the programs.” (CDC2)</p> <p>“For example, the speakers are old, so they do not work properly, affecting the communication.” (PC2)</p> <p>“We [teacher] prepare the content and print that out. There is no poster about dengue.” (SC2)</p> |
| | They lacked willingness to practice communicated content of households by interview health staff. | “...they [the households] still leave the water containers uncovered, leading to the increase of larvae and thus dengue fever. We have communicated in many places, but they do not cooperate, so it was difficult to eradicate dengue fever.” (CHC1) |
| | No difficulty for households to engage and practice all contents related to health education program by interview households | “...We [the households] know to keep personal hygiene and keep the house clean, as well as work with neighbors to clean the neighborhood, join the community to prevent dengue.” (HH1) |
| Ethicality | Both delivering (except people committee staff) and receiving groups felt comfort with the program. A common motivation was raising public awareness about dengue prevention and control to protect the community. | <p>“We [health staff] want to eradicate dengue as we observe that every endemic season causes a lot of difficulties and also negatively affects the economic status of the community.” (CHC2)</p> <p>“The communication will help the pupils to understand about dengue.” (SC1)</p> <p>“To protect myself and pupils, teachers at my school.” (SC2)</p> <p>“Our objective is that the community is aware of dengue thus protect themselves.” (PC1)</p> <p>“..., I [the household] receive advice about health protection. I am more aware of cleaning house, eating cooked food, and using bed nets to prevent dengue. I feel the importance of preventing dengue.” (HH3)</p> |
| | Health staff/collaborators, teachers at school could deliver the program content effectively due to frequent trainings. | <p>“We [health staff] mainly communicated about larvae eradication and guided the community how to do that, that is the initial step.” (CHC1)</p> <p>“The content of the communication for households was about cleaning living area (removing bushes), remove standing water, creating flow in standing water bodies, using a bed net. We [health collaborators] had to emphasize about keeping hygiene in the living area and personal hygiene.” (HC2)</p> <p>“At the beginning of the school year, the education department sent official dispatch about training, and then we [teachers] came back to school to communicate to pupils.” (SC1)</p> <p>“The content was checked by the health staff. The content will be selected and edited for broadcasting. There was no difficulty.” (PC2)</p> |
| | Intervention coherence | |

Table 2. (continued).

| | | |
|-------------------------|---|--|
| Intervention coherence | <p>People’s Committee did not face any difficulty when delivering the health education program as the content was prepared by health staff at the commune level.</p> <p>The households showed that they acknowledged the content of the program such as cleaning living area, using bed net, and removing standing water.</p> | <p>“The content was checked by the health staff. The content will be selected and edited for broadcasting. There was no difficulty.” (PC2)</p> <p>“...When the announcement about dengue was given, everyone was aware of cleaning the area, removing standing water, and use a bed net. The objects that might contain standing water, such as tires, were all removed to avoid the spreading of dengue.” (HH1)</p> |
| Opportunity cost | Not applicable | Not applicable |
| Perceived effectiveness | <p>The effectiveness of the program was assessed from moderate (teachers at school) to effective (other groups).</p> | <p>“...the community, in general, cares about the communication programs, and eventually reduces unhealthy behaviors... they also know to remove standing water in bottles, vases, and keep them up-side-down to avoid standing water.” (CDC1)</p> <p>“The awareness of the community, or the knowledge, is good... If we do a KAP (Knowledge Attitudes and Practice) survey for 10 households, 10 out of 10 would give very good answers. However, the shift from awareness to practice is very difficult.” (DHC)</p> <p>“The pupils show good awareness in dengue prevention.” (SC1)</p> <p>“..., I [the household] receive advice about health protection. I am more aware of cleaning house, eating cooked food, and using bed nets to prevent dengue. I feel the importance of preventing dengue.” (HH3)</p> <p>“..., I [the household] receive advice about health protection. I am more aware of cleaning house, eating cooked food, and using bed nets to prevent dengue. I feel the importance of preventing dengue.” (HH3)</p> |
| Self-efficacy | <p>All informant groups showed confidence in the maintenance of dengue prevention and control behaviors among the community and pupils,</p> <p>The large-scale and repetitive communication would be important to help the community to maintain their behaviors.</p> | <p>“Currently, the community changes their behaviors, should be 90%. There are few households have not changed yet due to economic difficulties.” (HC2)</p> <p>“...My school is very clean, and there is no standing water. In general, the self-awareness of pupils is very good, they actively keep classes clean and keep personal hygiene.” (SC2)</p> <p>“..., it [the program] is directly relevant to health, so the community will care about this. When the community is aware and is communicated, it is obvious that they will practice.” (PC1)</p> <p>“Enhance communication program; the communication program requires monitoring and evaluation; training should be provided to health staff and health collaborators at all levels; the authorities and stakeholders should provide budget timely, in order to increase the feasibility of the program.” (CDC1)</p> <p>“To be honest, my family is confident but when the rainy season (July, August) comes, we are more cautious that the cleaning might not be enough. Therefore, we ask the health collaborators to frequently check to achieve effective prevention.” (HH3)</p> |

it was suggested that the door-to-door visiting was effective as well as reinforced communication efforts using speakers in the case of COVID-19 prevention in Vietnam, thus they could exert the same effect in the prevention of dengue and other infectious diseases.¹²

The limited budget was considered as a major

burden of the health education program by all delivering groups (i.e., health staff, teachers at school, and the People’s Committee). Especially, the health collaborators were not allocated a specific fund for dengue but received an allowance from a common funding pool for all communicable diseases. This,

together with the increasing population, is a barrier to the implementation of the health education program. The increasing population means that one health collaborator will be responsible for more households. This leads to higher work pressure and increases in both frequency and distance of travel, while the allowance remains the same.

Thus, the outcome of the program could be negatively influenced and there is a risk of health collaborators resigning. Some of these cases actually occurred, as reflected in one sharing: “The allowance was a few hundred thousand Vietnam dong, but they work all the time in the endemic time, and some of them quit” (CDC2). The concern about the limited budget for health programs has been mentioned in many studies.^{11,13–15} Since the financial problem could not be solved in a short term, it is suggested that one health collaborator could concurrently be responsible for other tasks (e.g., member of women’s union, and residency cluster). This would not only diversify their income sources but also increase their familiarity with the community, thus facilitating the communication efforts. The advantages of this solution were mentioned in several studies in dengue prevention and control in Vietnam.^{16–18}

However, in the long term, the financial policy of the program should be adjusted, particularly in aspects such as increasing the allowance of health collaborators, investing in communicating facilities and evaluating the effectiveness of communication channels to propose proper fund allocation. In addition, the financial burden of the program could be reduced by enhancing stakeholders’ participation through community activities such as praising active citizens in dengue prevention and control.¹¹ Despite the difficulties, especially in the financial aspect, the delivering groups were confident about the communication capability. This might be due to the frequent training sessions planned annually.

These trainings provided insights into dengue prevention and control knowledge and improved learners’ communication capability, thus they could improve the effectiveness and efficiency in delivering the program. A study found that training is essential to increase the knowledge of school teachers and health educators about dengue.¹⁹ Another notable

point is that the community was considered, by both deliverers and receivers, to have a very good awareness of dengue after receiving the health education communication. This improved awareness is similar to the results of other knowledge, attitude, and practice assessments.^{20–22} Improving the community’s awareness was mentioned to be the motivation of health staff/collaborators and teachers to work in the program.

This interaction between deliverers and receivers was also indicated in a research that explained the extrinsic motivation of health workers was the responsibility to encourage people to prevent dengue.²³ However, the qualitative results suggested that the practice among the community remained limited, despite the fact that the community was considered to have good knowledge and awareness of dengue by both themselves and the health staff/collaborators. This finding is counter-intuitive since good knowledge is likely to result in good practice in dengue prevention.^{24–26} However, there were studies suggesting that knowledge might not be a sufficient indicator for good practice.^{27,28} In this case, the limited practice of households might be related to low socioeconomic status because these households tend to allocate time to make a living instead of preventing disease in general and dengue in particular, as reflected in one sharing: “There are few households that have not changed [their behaviors] yet due to economic difficulties” (HC2).

This issue was also indicated in another study.¹¹ Another possible explanation could be the reliance of the community on frequent monitoring from health staff/collaborators. Both communication deliverers and receivers said that the maintenance of preventive practice requires longer time and more monitoring from the health staff - “To be honest, my family is confident but when the rainy season (July, August) comes, we are more cautious that the cleaning might not be enough. Therefore, we ask the health collaborators to frequently check to achieve effective prevention” (HH3). One study suggested a similar explanation in the case of the Philippines.²⁸

5. Conclusions

Overall, the acceptability of the health education

program in dengue fever prevention and control was considered to be positive. However, the transformation from education to behaviors requires several years and the persistence of the education program. Besides, the major burden of the program was the limited budget that could lead to inadequate facilities for indirect communication and low human resources.

Acknowledgements

I would like to offer my special thanks to MPH Nguyen Thi Thuy - Buon Ma Thuot General Hospital for her assistance with my collection data.

Funding statement

Funding was provided by the Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, funded under the scholarship of the principal investigator by the World Health Organization Tropical Diseases Research (WHO-TDR).

Conflict of interests

All authors declare that they have no conflicts of interest.

References

1. WHO Centre for Health Development Kobe, Japan. A glossary of terms for community health care and services for older persons. Kobe, Japan: WHO Centre for Health Development; 2004. p. WHO/WKC/Tech.Ser./04.2. (WHO Kobe Centre Ageing and Health Technical Report; v. 5).
2. MOH Vietnam. Decision 3711/National Guideline on Dengue Surveillance, Prevention and Control. 2014.
3. Nguyen-Tien T, Lundkvist Å, Lindahl J. Urban transmission of mosquito-borne flaviviruses - a review of the risk for humans in Vietnam. *Infect Ecol Epidemiol.* 2019;9(1):1660129.
4. Le Van T, Van Tuyet NT, Quan NH, Duoc PT. Filogenia del virus del Dengue tipo2 identificado en el Altiplano Central de Vietnam. *Rev Biol Trop.* 2017;65(2):819–26.
5. Dak Lak Provincial Center for Disease Control. Surveillance data of dengue situation in Dak Lak 1998-2019. 2019;
6. Murphy AL, Gardner DM. Pilot testing the Theoretical Framework of Acceptability in a process evaluation of a community pharmacy-based men's mental health promotion program. *Sage Open.* 2019 Jul;9(4):215824401988512.
7. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res.* 2005 Nov 1;15(9):1277–88.
8. Grant M, Wilford A, Haskins L, Phakathi S, Mntambo N, Horwood CM. Trust of community health workers influences the acceptance of community-based maternal and child health services. *Afr J Prim Health Care Fam Med.* 2017 May 29;9(1):e1–8.
9. Driedger M, Mayhew A, Welch V, et al. Accessibility and Acceptability of Infectious Disease Interventions Among Migrants in the EU/EEA: A CERQual Systematic Review. *Int J Environ Res Public Health.* 2018;15(11):2329.
10. Yenus M, Berhe M, Brhane M, Kiflemariam A, Sereke K. Assessment the effectiveness of community based dengue and chikungunya intervention: Keren, Anseba zone Eritrea (2020). *Int J Mosq Res.* 2021;8(2):107–15.
11. Nguyen-Tien T, Probandari A, Ahmad RA. Barriers to engaging communities in a dengue vector control program: an implementation research in an urban area in Hanoi city, Vietnam. *American Journal of Tropical Medicine and Hygiene.* 2019;100(4):964–73.
12. Dang T. Communication as an effective strategy to combat COVID-19: the case of Vietnam [Internet]. International Network for Government Science Advice. 2020 [cited 2021 Jul 28]. Available from: <https://www.ingsa.org/covidtag/COVID-19-commentary/toan-vietnam/>
13. Lin H, Liu T, Song T, Lin L, Xiao J, Lin J, et al. Community involvement in dengue outbreak control: an integrated rigorous intervention strategy. *PLoS Negl Trop Dis.* 2016;10(8):1–10.
14. Nam VS, Kay B, Thi Yen N, Ryan P, Bektas A. Community mobilization, behaviour change and biological control in the prevention and control of dengue fever in Viet Nam. *Dengue Bulletin.* 2004 Dec; 28: 57-61 suppl.
15. Badurdeen S, Valladares DB, Farrar J, Gozzer E, Kroeger A, Kuswara N, et al. Sharing experiences: towards an evidence based model

- of dengue surveillance and outbreak response in Latin America and Asia. *BMC Public Health*. 2013;13(1):607.
16. Hai N van. Performance evaluation of collaborators in dengue prevention and control program of Ly Thai To ward, Hoan Kiem district in the first 6 months in 2009 [MPH]. Hanoi University of Public Health; 2009.
 17. Thuy NT. Performance evaluation of collaborators in dengue prevention and control program of Phuong Liet ward, Thanh Xuan District, Hanoi in 2010. Hanoi University of Public Health; 2010.
 18. Kay BH, Nam VS, Tien TV, et al. Control of aedes vectors of dengue in three provinces of Vietnam by use of Mesocyclops (Copepoda) and community-based methods validated by entomologic, clinical, and serological surveillance. *Am J Trop Med Hyg*. 2002;66(1):40-48.
 19. Kumar V, Rathi A, Lal P, Goel S. Malaria and dengue: Knowledge, attitude, practice, and effect of sensitization workshop among school teachers as health educators. *J Family Med Prim Care*. 2018;7(6):1368.
 20. Shuaib F, Todd D, Campbell-Stennett D, Ehiri J, Jolly PE. Knowledge, attitudes and practices regarding dengue infection in Westmoreland, Jamaica. *West Indian Med J*. 2010;59(2):139-46.
 21. Sreedevi A, Burru R, Rao G, Yalamanchili P, Subhaprada C, Kumari V, et al. Study on awareness about vector borne diseases and education about preventive measures in rural field practice areas of Kurnool Medical College, Kurnool. *Int J Med Sci Public Health*. 2016;5(9):1803.
 22. Van NTH. Situation of dengue fever and evaluating the effectiveness of community-based intervention model in the Central Highlands (2005-2014) (in Vietnamese). Vietnam Military Medical University; 2018.
 23. Marha DA, Fatah MZ, Winarko W. The role of health workers and community leaders to prevent dengue hemorrhagic fever in Magetan, East Java. *Jurnal Promkes: The Indonesian Journal of Health Promotion and Health Education*. 2020; 8(2).
 24. Itrat A, Khan A, Javaid S, Kamal M, Khan H, Javed S, et al. Knowledge, awareness and practices regarding dengue fever among the adult population of dengue hit cosmopolitan. *PLoS ONE*. 2008 Jul 9;3(7): e2620.
 25. Hairi F, Ong CHS, Suhaimi A, Tsung TW, bin Anis Ahmad MA, Sundaraj C, et al. A knowledge, attitude and practices (KAP) study on dengue among selected rural communities in the Kuala Kangsar district. *Asia Pac J Public Health*. 2003;15(1):37-43.
 26. Tran VH. Knowledge, Attitude, and Practice in dengue prevention of the community in Binh Thanh commune, Thanh Binh district, Dong Thap in 2006 (in Vietnamese). Hanoi University of Public Health; 2006.
 27. Dang TKH. The current situation and associated factors to dengue population in Thinh Liet and Tran Phu wards, Hoang Mai districts, Hanoi in 2007 (in Vietnamese). Hanoi University of Public Health; 2007.
 28. Yboa BC, Labrague LJ. Dengue knowledge and preventive practices among rural residents in Samar Province, Philippines. *Am J Public Health Res*. 2013 Sep 10;1(2):47-52.

COVID-19 and health behaviors of the vulnerable group in the disaster-prone area: a case study of volcano-prone Merapi, Indonesia

Diah Setyawati Dewanti, Romi Bhakti Hartarto

Department of Economics, Faculty of Economics and Business, Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia

SUBMITTED: 5 May 2022 REVISED: 25 November 2022 ACCEPTED: 26 November 2022

KEYWORDS

COVID-19
Health behavior
Indonesia
Merapi disaster prone area
Vulnerable group

ABSTRACT As the world's fourth most populous country, Indonesia is predicted to suffer greatly from the pandemic. One of the most vulnerable groups in Indonesia is those living in the disaster-prone areas where access to health services is limited. This study aims to identify whether households in the disaster-prone area were already aware of and have implemented protective health behaviors during the COVID-19 pandemic. The location of the study was at Dongkelsari settlement houses in the Disaster-Prone Area III of Mount Merapi, the most active volcano in Indonesia. Descriptive statistics were used to summarize the quantitative data collected from face-to-face interviews with 142 out of 161 households residing in that area. Our findings suggest that knowledge about disease and prevention is quite high in our sample. More than 90% of the sample were already aware of COVID-19 transmission and understood that washing hands and wearing facemasks can prevent the spread of COVID-19. This high level of awareness is inseparable from the active role of community leaders in Dongkelsari area. However, only less than half of the sample reported practicing safe physical distancing. In conclusion, our study relies on field observation, and this complements the existing evidence by capturing a clearer picture of the COVID-19 awareness among the underrepresented population living in the disaster-prone area of Merapi volcano.

© The Journal 2022. This article is distributed under a [Creative Commons Attribution-ShareAlike 4.0 International license](https://creativecommons.org/licenses/by-sa/4.0/).

1. Introduction

After the novel Corona Virus Disease 2019 (COVID-19) started in the city of Wuhan at Hubei Province in China, the world has suffered severely from the global pandemic induced by SARS-CoV-2. The pandemic has certainly disrupted economic stability and many aspects of life. With its unprecedented impacts, the world might take more than ten years to recover, both economically and societally. Given the unforeseen and rapid spread of COVID-19, the pandemic has put immense pressure on health systems and left many governments worldwide unprepared, particularly low- and middle-income countries with less resilient health systems.

Every country should adopt preventive measures to slowdown the spread of COVID-19 and prevent its health systems and economies from becoming collapsed. The success of such measures depends on the adherence of the population. Accordingly, governments need to ensure that the population is well-informed concerning the disease and people strictly follow all the necessary safety measures.¹

As the fourth most populous country in the world, Indonesia is predicted to suffer greatly from the pandemic, even for a longer time period. However, two years after its first confirmed case on March 2, 2020, the country is currently managing to survive from an economic recession and on its track to recovery. During the pandemic, although the government and health professionals have recommended effective containment measures such as staying at home, physical distancing, frequent handwashing and

*Correspondence: romi.hartarto@umy.ac.id
Department of Economics, Faculty of Economics and Business, Universitas Muhammadiyah Yogyakarta, Jl. Brawijaya, Kasihan, Bantul, Yogyakarta 55183, Indonesia.

wearing facemasks, it remains unknown whether vulnerable groups in the population also engage in preventive health behaviors. One of the most vulnerable groups is those living in the disaster-prone areas with limited access to basic health services. They are still encountering health disparities due to various obstacles with regard to the lack of health care resources, geographic distance, transportation, and lower socioeconomic status.

While existing research has paid attention to preventive behaviors among rural residents, there is limited and even no evidence of the impact of COVID-19 pandemic on changes in health behaviors among households living in the disaster-prone area.¹⁻³ A clear understanding of whether COVID-19 has influenced the health behaviors among this vulnerable group is important to inform government interventions that are relevant to future situations in such areas. Therefore, the aim of this study is to examine whether households in the disaster-prone areas were aware of and have practiced health preventive measures during the COVID-19 pandemic in Indonesia. This study is particularly relevant as a means to prepare for a future pandemic or health crisis.

To shed light on the research objective, we conducted face-to-face interviews with 142 households living at Dongkelsari settlement houses in the Disaster-Prone Area III of Mount Merapi, the most active volcano in Indonesia. Participants were asked about their basic profile, implementation of preventive health behaviors, community support, healthy lifestyle and general knowledge about COVID-19 transmission. We used descriptive statistics to summarize the quantitative data collected from the participants.

So far, there is an online survey conducted in Indonesia indicating that even though the majority of respondents possessed basic knowledge on COVID-19, they still need further information about symptoms, transmission, prevention and testing.⁴ However, this online survey tends to oversample younger individuals and those with higher socioeconomic status. They are more likely to have various sources of information and means to process the knowledge and act on it rather than the average

population.⁵ In contrast to online surveys, our study relies on field observation and this complements the existing evidence by capturing a clearer picture concerning the COVID-19 awareness among the underrepresented populations living in the disaster-prone areas.

2. Methods

2.1 Study area

Mount Merapi is one of the most active and hazardous volcanoes in Indonesia, where more than 70 eruptions have occurred since 1548.⁶ It is situated 30 km north of the city center of Yogyakarta. The latest eruption occurred in 2010, causing damages to more than 2,200 houses.⁷ The status of the volcano has been on alert since May 2018, leading to the potential eruption amid the COVID-19 pandemic. The existence of communities residing in the Disaster-Prone Area III of Mount Merapi then becomes vulnerable populations in a distinct danger zone. In this study, we focused on inhabitants of the Dongkelsari settlement houses.

Initially, the Dongkelsari settlement houses were built as temporary shelters for the eruption victims of Mount Merapi after their old houses were destroyed. Dongkelsari is situated in Wukirsari Village, Cangkringan Subdistrict, covering two small villages named Gungan in the northern part and Srodokan in the southern part with an area of 24,690 m². There are 161 households residing in the settlement houses. There are some public facilities such as green open space, mosque, gazebo-like building, and security kiosk. The majority of Dongkelsari residents work as peasants and cattlemen, while the rest are pensionaries. The nearest public health service is situated around two kilometers from Dongkelsari area with difficult access to get there due to uneven terrain and winding roads.

2.2 Study design and participants

Data were collected from a structured questionnaire with face-to-face interviews between end of August 2020 and early September 2020. Selection of this period was based on the mild situation in Mount Merapi. We conducted door-to-door interviews with 142 respondents aged 16 years

or older from 161 households. The remaining 19 households refused to be interviewed due to various reasons, such as relocation to safer area, health issues, and not having enough time.

Participants were given a brief description of the study and written consent to participate in the study before the start of the questionnaire/interview. They received a token of appreciation in the form of hand soap and detergent upon completing the questionnaire. The study was approved by the Research Community Service and Publication Institution as the Institutional Ethical Board in Universitas Muhammadiyah Yogyakarta with the number 031/PEN-LP3M/I/2020.

2.3 Questionnaire and data analysis

The purpose of this study was to determine the impact of COVID-19 on preventive health behaviors. The questionnaire was developed through the role of the experts who understood the topic well. The experts read through the questionnaire and assessed whether the questions already captured the investigated topic effectively. They pretended to fill out the questionnaire and checked whether there were common errors such as confusing and 'double-barreled' questions. Given that the population is around 160 households, we validated the questionnaire through a pilot test. We started with 30 participants, and after some feedback and discussion, we dropped any irrelevant questions.

The participants were asked about their area of settlement, age and gender. Then, we captured self-reported preventive measures with a 4-point Likert scale where '1' indicates "never" and '4' indicates "always". We focused our analysis on three preventive health behaviors as suggested by the government and health experts: physical distancing, hygiene, and wearing facemask. We defined physical distancing by staying at least 1 meter apart from other people in public spaces, while hygiene was defined as using hand sanitizer and frequently washing hands with soap.

In the next part, the questions were related to community support with a series of yes/no question. We asked about self-assessment from

participants whether in their community there are: (1) handwashing facilities in the entrance to market, restaurant, store, health center and school, (2) provision of hand sanitizer in in the entrance to market, restaurant, store, health center and school, (3) provision of handwashing barrel in front of houses, (4) restriction of guests visiting from out of town, (5) curfew restrictions, (6) prohibition of guests from out of town to stay, (7) portal closure at night, (8) self-isolation after travelling out of town, (9) mandate to wear facemasks outside the house, (10) prohibition to organize event, and (11) stipulation to self-report to local leaders after travelling out of town.

For questions concerning healthy lifestyle, participants were asked whether there is any household member smoking. If participants responded yes, they were asked whether there is any change in smoking habit with a 4-point Likert scale (1 = no changes, 2 = reduced a little, 3 = reduced greatly, 4 = quit smoking) and how many cigarettes consumed in daily basis after the pandemic. Then, we asked the participants whether smoking makes COVID-19 worse (yes/no). We also asked the participants to rate the eating habits of their family in general whether they ate fruits and vegetables using a 4-point Likert scale (1 = no, 2 = once in a week, 3 = once in a day, 4 = three times in a day) and whether they performed physical exercise for at least 30 minutes per day (1 = no, 2 = once in a week, 3 = three times in a week, 4 = everyday).

Finally, we assessed the knowledge of the participants since one important determinant of the implementation of preventive health behaviors is information.⁸ In a pandemic situation, behavioral responses are driven by knowledge on how the virus spreads and which precautionary actions exist.⁹ Individuals with greater knowledge are more likely to adhere with restrictions during an outbreak.¹⁰

There are eight questions on basic knowledge of COVID-19 transmission, prevention and uptake of protective behaviors. The participants were given agree/disagree questions, coded as 0 (disagree) and 1 (agree). Such questions include: (1) knowledge about COVID-19 transmission through droplets, (2) prohibition of buffet style of eating, preventive measures such as (3) frequent handwashing, (4)

Table 1. Preventive health behaviors of study participants in Dongkelsari.

| Variable | Frequency (%) | Min | Max | Mean | Std. Dev. |
|-----------------------|---------------|-----|-----|------|-----------|
| Handwashing with soap | 142 | 1 | 4 | 3.92 | 0.23 |
| Never | 1 (0.7) | | | | |
| Seldom | 0 (0.0) | | | | |
| Sometimes | 8 (5.6) | | | | |
| Always | 133 (93.7) | | | | |
| Using sanitizer | 142 | 1 | 4 | 3.36 | 0.71 |
| Never | 4 (2.9) | 15 | | | |
| Seldom | 10 (7.0) | | | | |
| Sometimes | 59 (41.5) | | | | |
| Always | 69 (48.6) | | | | |
| Physical Distancing | 142 | 1 | 4 | 3.27 | 0.68 |
| Never | 1 (0.7) | | | | |
| Seldom | 18 (12.7) | | | | |
| Sometimes | 64 (45.1) | | | | |
| Always | 59 (41.6) | | | | |
| Wearing facemask | 142 | 1 | 4 | 3.81 | 0.47 |
| Never | 1 (0.7) | | | | |
| Seldom | 2 (1.4) | | | | |
| Sometimes | 20 (14.1) | | | | |
| Always | 119 (83.8) | | | | |

Min-max, minimum-maximum; Std. Dev., standard deviation.

wearing facemask, (5) regular exercises, (6) boost immunity with supplements and vitamins, and (7) knowledge that COVID-19 is likely to transmit from airborne droplets. We summed up the scores for these eight items, of which higher scores represented better knowledge in COVID-19. All the data obtained from the study questionnaire were then compiled and measured using descriptive statistics through SPSS 17.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics contain some basic statistical measures, such as mean, standard deviation (SD), minimum and maximum values, to help us analyze the location and dispersion of the data.

3. Results

From the sample of 142 participants, 66.2% were women and 33.8% men. The average age of participants was 43 years and the most represented category was 35 – 45 years old (59, 41.5%). Based on the study framework, the results were divided into four categories. First, considering the importance of preparedness for responding to the COVID-19 pandemic, the participants were asked to rate their level of intensity for preventive health measures on the Likert scale of 1 to 4.

As seen in Table 1, the following results were

obtained: washing hands with soap ($X = 3.92$), using hand sanitizer ($X = 3.36$), keeping a suggested distance of 1 meter from other people ($X = 3.27$) and wearing facemask ($X = 3.81$). It was found that majority of the participants were more engaged with some preventive behaviors such as washing hands frequently with soap (93.7%) and wearing face masks (83.8%), but less engaged with using hand sanitizer (48.6%) and practicing safe physical distancing (41.6%).

Second, in terms of community support, the participants reported that around 80% were aware of the provision of handwashing facilities and hand sanitizer in public spaces as reported in Table 2. This finding indicates strong community support in maintaining preventive health behaviors of the people outside their house. Moreover, the majority of participants were also aware of stipulation set by the local leader to prevent further spread of COVID-19 ranging from prohibition to organize public events (73%) to a mandate of wearing facemasks (96%). This high awareness is potentially due to a relatively low population density. Any violation to this stipulation will be easily identified by other inhabitants in that area.

Third, concerning the healthy lifestyle, Table 3

Table 2. Community support for preventive health behaviors in Dongkelsari.

| Variable | Min | Max | Mean | Std. Dev. |
|--|-----|-----|------|-----------|
| Provision of handwashing facilities | 142 | 1 | 4 | 3.92 |
| Market | 0 | 1 | 0.85 | 0.36 |
| Restaurant | 0 | 1 | 0.88 | 0.33 |
| Store | 0 | 1 | 0.92 | 0.27 |
| Health Centre | 0 | 1 | 0.84 | 0.37 |
| School | 0 | 1 | 0.83 | 0.38 |
| Provision of hand sanitizer | 142 | 1 | 4 | 3.81 |
| Market | 0 | 1 | 0.79 | 0.41 |
| Restaurant | 0 | 1 | 0.85 | 0.36 |
| Store | 0 | 1 | 0.87 | 0.34 |
| Health Centre | 0 | 1 | 0.85 | 0.36 |
| School | 0 | 1 | 0.82 | 0.39 |
| Provision of handwashing barrel | 0 | 1 | 0.92 | 0.28 |
| Restriction of guests | 0 | 1 | 0.94 | 0.24 |
| Curfew restriction | 0 | 1 | 0.82 | 0.38 |
| Prohibition of guests staying | 0 | 1 | 0.85 | 0.36 |
| Portal closure at night | 0 | 1 | 0.90 | 0.30 |
| Self-isolation from out of town | 0 | 1 | 0.89 | 0.32 |
| Mandate to wear facemask | 0 | 1 | 0.96 | 0.20 |
| Prohibition to organize event | 0 | 1 | 0.73 | 0.44 |
| Self-report to local leader from out of town | 0 | 1 | 0.86 | 0.35 |

Min-max, minimum-maximum; Std. Dev., standard deviation.

Table 3. Healthy lifestyle of study participants in Dongkelsari.

| Variable | Obs. | Min | Max | Mean | Std. Dev. |
|---------------------------------------|------|-----|-----|------|-----------|
| Smoking family member(s) | 142 | 0 | 1 | 0.51 | 0.50 |
| Number of cigarettes | 46 | 1 | 30 | 7.89 | 6.19 |
| Change in smoking habit | 72 | 1 | 4 | 1.74 | 0.84 |
| No changes | 36 | | | | |
| Reduced a little | 23 | | | | |
| Reduced greatly | 11 | | | | |
| Quit smoking | 2 | | | | |
| Smoking makes COVID-19 worse | 142 | 0 | 1 | 0.58 | 0.49 |
| Has a smoking family member | 72 | 0 | 1 | 0.53 | 0.50 |
| No smoking family member | 70 | 0 | 1 | 0.64 | 0.48 |
| Eating fruits and vegetables everyday | 142 | 1 | 4 | 2.77 | 0.78 |
| Daily physical exercise | 142 | 1 | 4 | 2.76 | 0.93 |

Min-max, minimum-maximum; Std. Dev., standard deviation.

shows that half of our sample has a smoking family member. The average of reported consumption is 8 cigarettes per day. Our sample reported that half of those with smoking family member do not change their smoking habits. It seems that the COVID-19 pandemic does not have any impact on smoking habits. While 47% reported reduction in consumption of cigarette and 3% quit smoking, we

cannot conclude that this behavior is driven by the pandemic. This is supported by mixed responses of whether smoking makes COVID-19 worse. Only 53% of participants with a smoking family member believed that smoking could increase the risk from COVID-19. There is a low correlation between reduced or quitting smoking and the belief that smoking could make COVID-19 worse for those with

Table 4. COVID-19 knowledge of study participants in Dongkelsari.

| Variable | Min | Max | Mean | Std. Dev. |
|---|-----|-----|------|-----------|
| COVID-19 transmission through droplet | 0 | 1 | 0.96 | 0.20 |
| Prohibition of buffet | 0 | 1 | 0.76 | 0.43 |
| Handwashing with soap | 0 | 1 | 0.96 | 0.20 |
| Wearing facemask outside the house | 0 | 1 | 0.99 | 0.08 |
| Regular physical exercise | 0 | 1 | 0.88 | 0.33 |
| Boost immunity with supplements and vitamins | 0 | 1 | 0.75 | 0.43 |
| Likely COVID-19 transmission from airborne droplets | 0 | 1 | 0.80 | 0.40 |
| Total score | 4 | 7 | 6.10 | 0.85 |

Min-max, minimum-maximum; Std. Dev., standard deviation.

a smoking family member ($p = 0.03$).

Meanwhile, those with non-smoking family member believe more that smoking increases the risk of COVID-19 (64%). For eating habits and physical exercise, it is reported that participants in general have eaten fruits and vegetables regularly ($X = 2.77$) and routinely practiced exercise ($X = 2.76$).

Finally, in terms of basic knowledge (Table 4), 96% of participants indicated that they had knowledge that COVID-19 is transmitted through droplets. This contributed to the higher proportion of participants having knowledge of several prevention measures such as handwashing with soap (96%) and wearing facemasks outside their house (99%). The majority of participants were aware that physical exercise is important even if they have washed their hands frequently with soap and worn facemasks (88%). They were also knowledgeable that buffet style of eating is prohibited to prevent COVID-19 spread (76%) and consuming supplements and vitamins is necessary to boost their immune system (75%). They already understood that COVID-19 was less likely transmitted from airborne sources (80%). In terms of total score, the basic knowledge of study participants about COVID-19 was relatively high. It is 6.1 out of 7 on average.

4. Discussion

Our findings add to a recent and growing literature on COVID-19 knowledge and attitudes. A global online survey exposed high compliance to preventive behaviors across countries.¹¹ The evidence for knowledge on transmission of the disease is widely reported among respondents in some developing

countries such as Nigeria and India, but not in Peru.¹²⁻¹⁵

The above mentioned results reveal knowledge about the COVID-19 pandemic and preventive health behaviors among study participants in the disaster-prone area of Merapi volcano. Although the COVID-19 pandemic was not yet advanced in Dongkelsari at the time of data collection, awareness of and basic knowledge on the COVID-19 was already high. These findings were somewhat in contrast to the existing literature where rural residents were less likely to perform protective behaviors during an outbreak.^{1,3,16} The majority of participants were already aware of COVID-19 transmission and able to mention preventive health measures. This finding implies that information about COVID-19 has reached the population group living in the disaster-prone area of Merapi volcano.

This finding is inseparable from the importance of community leaders as the respected figures in Dongkelsari area. It was mentioned in the Results section that the compliance of the study participants toward the stipulation set by the community leaders is quite high, ranging from 73% to 96%. Based on the field observations, the community leader in Dongkelsari is quite young, tech savvy and currently works in the COVID-19 taskforce, making the basic information about COVID-19 well-distributed to the inhabitants of Dongkelsari. This is particularly supported by the low population density in that area which makes information delivered more easily. In addition to basic knowledge about COVID-19, community support such as provision of handwashing facilities in public spaces and mandate to wear facemasks outside their house

were found to facilitate participants' compliance in applying such behaviors. On the other hand, study participants seemed to be less engaged in using hand sanitizer and applying safe physical distancing. Thus, compelling people to apply safe physical distancing, for instance, needs to be reinforced. Neglect of this preventive measure by community members may lead to adverse consequences since most cases of COVID-19 in Indonesia have been associated with the lack of physical distancing in public spaces.

To improve compliance with preventive measures such as physical distancing, we recommend the active involvement of social workers. It is because social workers promote preventive efforts through distribution of accurate information from reliable sources.¹⁷ In China, for example, social workers are considered as front liners in the COVID-19 pandemic response. Their duties include mobilizing and coordinating resources in the community, providing volunteer support and identifying the special needs of vulnerable groups.¹⁸ This study then offers suggestions for social workers to help control the spread of COVID-19 in the disaster-prone communities in Indonesia.

Finally, changing health behavior is the most important factor in tackling the pandemic. While our study may have revealed interesting findings that have implications for future research and social-work practice, there are some limitations inherent in the study. Findings from this study represent the knowledge and attitude of a sample of locals from a small community in the disaster-prone area of Mount Merapi. We do not account for views of other locals from different community so that we do not generalize our findings to the larger population. Thus, findings may differ with an institutional setting and a larger sample size. However, this study is still important in that it can be used as a starting point to see a bigger and clearer picture of other disaster-prone areas in Indonesia during the COVID-19 pandemic.

5. Conclusions

The risk to communities with widespread transmission of COVID-19 relies on the virus' characteristics, the severity of the illness, and the available medication

to curb the impact of the virus. In the absence of medication during the pandemic, behavioral interventions become the most important strategy based on preventive measures implemented by the citizen. In this study, we explore the knowledge and preventive health behaviors against COVID-19 in Dongkelsari settlement houses which are situated in the disaster-prone area of the active volcano, Mount Merapi.

Our study was conducted via a structured questionnaire with face-to-face interviews. Interestingly, although our concern was those living in the disaster-prone area at the slope of mountain, we found high knowledge exists among the study participants as well as strong community support in the neighborhood. These might contribute to be the driving factor in preventive health behaviors against COVID-19. Our findings imply that the information about COVID-19 was already well-received by those living in the disaster-prone area. However, given that this study was only based on one location, future research should address other locations in the disaster-prone area for external validity of the findings.

Acknowledgment

Special thanks to Nabila Nur Fitria and Rianti Nur Istiqomah for helping us collect data in the field.

Conflict of interests

There is no conflict of interest in this study.

References

1. Chen X & Chen H. Differences in preventive behaviors of COVID-19 between urban and rural residents: lessons learned from a cross-sectional study in China. *Int J Environ Res Public Health*. 2020;17(12):4437.
2. Arisanti N, Pakasi TA. & Syarhan S. Rural health response and community preparedness for the COVID-19 pandemic. *Rev Prim Care Pract Educ*. 2020;3(3):8–10.
3. Callaghan T, Lueck JA, Trujillo KL, & Ferdinand AO. Rural and urban differences in COVID-19 prevention behaviors. *J Rural Heal*. 2021;37(2):287–95.

4. Arriani A, Fajar S, & Pradityas H. Rapid Assessment: Community perception on COVID-19. In: International Federation of Red Cross and Red Crescent Societies. 2020.
5. Boas TC, Christenson DP, & Glick DM. Recruiting large online samples in the United States and India: Facebook, Mechanical Turk, and Qualtrics. *Polit Sci Res Methods*. 2020;8(2):232–250.
6. Voight B, Constantine E, Siswawidjono S, & Torley R. Historical eruptions of Merapi Volcano, Central Java, Indonesia, 1768-1998. *J Volcanol Geotherm Res*. 2000;100:69–138.
7. Jenkins S, Komorowski JC, Baxter P, Spence R, Picquout A, Lavigne F, et al. The Merapi 2010 eruption: an interdisciplinary impact assessment Methodology for Studying pyroclastic density current dynamics. *J Volcanol Geotherm Res*. 2013;261:316–29.
8. Dupas P. Health behavior in developing countries. *Annu Rev Econom*. 2011;3(1):425–449.
9. Bish A & Michie S. Demographic and attitudinal determinants of protective behaviors during a pandemic: a review. *Br J Health Psychol*. 2010;15(4):797–824.
10. Eastwood K, Durrheim DN, Butler M, & Jones A. Responses to pandemic (H1N1) 2009, Australia. *Emerg Infect Dis*. 2010;16(8):1211–1216.
11. Fetzer T, Witte M, Hensel L, Jachimowicz J, Haushofer J, Ivchenko A, et al. Global Behaviors and perceptions at the onset of the COVID-19 pandemic [Preprint]. 2020. (Working Paper Series). Report No.: 27082. Available from: <http://www.nber.org/papers/w27082>
12. Roy D, Tripathy S, Kar SK, Sharma N, Verma SK, & Kaushal V. Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. *Asian J Psychiatr*. 2020;51:102083.
13. Olapegba PO, Ayandele O, Kolawole SO, Oguntayo R, Gandhi JC, Dangiwa AL, et al. A preliminary assessment of novel coronavirus (COVID-19) knowledge and perceptions in Nigeria. *medRxiv*. 2020. Available from: <http://medrxiv.org/content/early/2020/04/19/2020.04.11.20061408.abstract>.
14. Nnama-Okechukwu CU, Chukwu NE, & Nkechukwu CN. COVID-19 in Nigeria: knowledge and compliance with preventive measures. *Soc Work Public Health*. 2020;35(7):590–602.
15. Zegarra-Valdivia J, Chino Vilca BN, & Ames-Guerrero RJ. Knowledge, perception and attitudes in regard to COVID-19 pandemic in Peruvian population [Preprint]. 2020. Available from: psyarxiv.com/kr9ya
16. Chavarría E, Diba F, Marcus ME, Marthoenis, Reuter A, Rogge L & Vollmer S. Knowing versus doing: protective health behavior against COVID-19 in Aceh, Indonesia. *J Dev Stud*. 2021;57(8):1245–66.
17. NASW. Implications of coronavirus (COVID-19) to America's vulnerable and marginalized populations. 2020. Available from: <https://www.socialworker.org/Practice/Infectious-Diseases/Coronavirus>
18. Cui K. Tasks and competence of frontline social workers in fighting the COVID-19 pandemic: stories from Chengdu, China. *International Association of Schools of Social Work [IASSW]*; 2020.

Young father-child relationship pattern and nutrition status among under-five children in Jember Regency, Indonesia

Ubaidillah Ustman,¹ Tantut Susanto,^{2*} Hany Rasni,² Nuning Dwi Merina,³ Fahrudin Kurdi,^{2,3}

¹ Undergraduate Student, School of Nursing, Universitas Jember, Indonesia

² Family and Community Health Nursing Department, School of Nursing, Universitas Jember, Indonesia

³ Pediatric and Maternal Nursing Department, School of Nursing, Universitas Jember, Indonesia

SUBMITTED: 9 June 2021

REVISED: 13 September 2022

ACCEPTED: 23 November 2022

KEYWORDS

Young father
Nutritional status
Early marriage
Under-five children

ABSTRACT The younger age of fathers will affect the pattern of relationship between fathers and their children, particularly in terms of nutrition provision of children under five years. The objective of this study was to identify and measure the correlation between the pattern of relationship between fathers and their children and nutritional status in Jember Regency of Indonesia. A cross-sectional study was conducted from September to December 2019. The participants were 39 young fathers aged 17-19 years who have an infant aged 0-5 years. They were recruited using total sampling technique. Respondents' characteristics and child-parent relationships were measured using a questionnaire. The Chi-square test was used to analyze the data. Among the 39 young fathers, the young father and children relationship was high (56.4%). Meanwhile, the nutritional status of children was good (48.7%). Furthermore, there was a significant correlation between the pattern of father-child relationship and nutritional status among the children ($\chi^2 = 11.83$; $p < 0.001$). The higher the pattern of father-child relationship, the better was the nutrition of the children (OR = 12.0; 95% CI = 2.5-57.4). The father-child relationship pattern is related to children's nutritional status. Therefore, the father-child relationship should be well-maintained to fulfill the nutrition needs of under-five children.

© The Journal 2022. This article is distributed under a [Creative Commons Attribution-ShareAlike 4.0 International license](https://creativecommons.org/licenses/by-sa/4.0/).

1. Introduction

The prevalence of nutrition problems among under-five children in Indonesia is still very high. The Basic Health Research conducted by the Ministry of Health in 2018 showed that 17.7% of under-five children still had problems of nutritional status, including 3.9% with malnutrition and 13.8% with less nutrition.¹ This condition shows that Indonesia has not been able to reach the target of Sustainable Development Goals (SDGs) for ending all forms of malnutrition in 2030.² Meanwhile, regarding data from August 2019, the district health center of Jember recorded 699 toddlers who suffered from stunting (including: 476 short stunting and 223 very short stunting).

As a result, the prevalence of stunting among

under-five children is 66.59%. The prevalence of stunting in Jember Regency is 39.2% which is higher than that in Sumenep (32.5%) and Bangkalan (32.1%). These nutrition problems among children are caused by many factors including a high percentage of carbohydrate intake, cost of food expenditure, and the lack of involvement of fathers in parenting.^{3,4} Meanwhile, the age of the children, occupation of head of household, family size, father's education, diarrhea, acute respiratory infections, late breastfeeding initiation, first lactation, and lack of vaccination influence the nutrition of children.^{5,6}

Previous research indicated that the average age of family heads (fathers) was 16-18 years (1.04%), 19-24 years (6.04%), and 25-30 years (15.74%).⁷ Based on the 2019 Indonesian Law of Marriage, marriages can be conducted for men and women aged 19 years and permission from both parents is required.⁸ The rate of early marriage in Indonesia is very high because of several factors, including parental,

*Correspondence: tantut_s.psik@unej.ac.id
Family and Community Health Nursing Department, School of Nursing, Universitas Jember, Indonesia. Jl. Kalimantan No.37, Jember, Jawa Timur 68121, Indonesia.

economic, educational, and customary factors.⁹ Meanwhile, children who are born from mothers with early marriage are facing the risk of disrupted growth and development, loss of interest in learning, and personality problems.¹⁰ This condition also affects the effort of the family to fulfil the nutrition of children.

Too early married age effects the abilities of the family heads or fathers to solve the family problems thoroughly. Therefore, the older age of fathers is usually when they think more maturely (more than 20 years) for developing the family well.¹¹ Previous research showed that fathers who worked too hard to fulfil their family economic needs have direct impacts on children's eating patterns. Meanwhile, fathers who have longer working hours can increase the incidence of the children consuming unhealthy foods.¹² Therefore, families must be actively involved in caring for their children, because the nutrition status of under-five children is related to the environment of giving care for the children.¹³

Furthermore, to improve the nutrition and health of children, young fathers are needed to support their families. Young fathers have an important role in providing instrumental and emotional support to mothers and children while fulfilling the nutritional needs in their family.¹⁴ The young fathers have an important role in decision-making, protection from family risks, and providing motivation to their wife.¹³ Younger aged fathers tend to have more time outside of the home for fulfilling their family needs. This condition results in a reduced relationship between fathers and their children. On the contrary, the mother's main responsibilities are to care and stimulate the growth and development of children in the Indonesian context.¹⁵

However, young fathers were still limited in providing stimulation for their children who needed support from the whole family. Therefore, the aim of the study was to identify and measure the correlation between the pattern of relationship between fathers and their children's nutritional status among under-five children in Jember Regency, Indonesia.

2. Methods

A cross-sectional study was conducted during

September to December 2019 involving young fathers and their children in Jember Regency, East Java, Indonesia. The participants were recruited using total sampling technique. The participants were 39 fathers who volunteered to participate in the study. The inclusion criteria for this study were young fathers aged 17-19 years having infants aged 0-5 years, children cared for their families and they were willing to participate in this study. The exclusion criteria were fathers who resigned, fathers having communication disorder, fathers living outside the city, and children with a congenital defect.

A self-administered questionnaire was used to identify sociodemographic characteristics of the fathers and their children. The Child-Parent Relationship Scale-Short Form (CPRS-SF) was employed to measure the relationship between fathers and their children.¹⁶ This questionnaire contains 30 statements about the relationship between fathers and their children on a 5-point Likert scale (strongly agree, agree, sometimes agree, disagree, and strongly disagree). Statements listed in the questionnaire include 15 items of negative statements and 15 items of positive statements. Every positive statement was scored with 4 while negative statements had a value of 0, which means if the respondent strongly agrees with a positive statement then it is worth 4 and 0 if strongly disagree. Then, vice versa for a negative statement, if the respondent strongly agrees then it is worth 0 and if strongly disagrees, it is scored with 4 so that the total score obtained ranges from 0-120.

Meanwhile, a microtoise was used to determine children's weight, then converted to z-score with the WHO-2018 AnthroPlus software tool.¹⁷ The CPRS-SF questionnaire comprises 10 statements with 5-point Likert scale: (1 = definitely does not apply, 2 = not really, 3 = neutral, not sure, 4 = applies somewhat, and 5 = definitely applies) related to conflict, positive aspects of the relationship, and dependence.¹⁶ The total score of CPRS-SF was 15-75 categorized into five groups: (1-24 values of very low relationship, 25-48 low relationship, 49-72 moderate relationship, 73-96 high relationship, and 97-120 very high relationship).

This questionnaire had been tested for validity and reliability in the Indonesian version with a value

Table 1. Distribution of age of participants (n=39).

| Characteristics of father | Md | (Min-Max) |
|---------------------------|----|-----------|
| Age (year) | 19 | (17 - 19) |

Table 2. Distribution of sociodemographic of participants (n=39).

| Characteristics of father | n (%) |
|---------------------------|------------|
| Employment history | |
| Seller | 1 (2.6) |
| Labor | 17 (43.6) |
| Farmer | 19 (48.7) |
| Entrepreneur | 2 (5.1) |
| Education history | |
| Not attending school | 2 (5.1) |
| Elementary school | 21 (53.8%) |
| Junior high school | 14 (35.9) |
| Senior high school | 2 (5.1) |

of $\alpha = 0.84-0.89$ and reliability with a value of $R = 0.968$.¹⁸ However, in this study, the CPRS-SF was categorized into two categories, namely the low and high relationships. Regarding the Chi-square test, there were some rows having values under 5 (90%). Therefore, the CPRS-SF originally consists of 5 categories, namely very low, low, moderate, high and very high. Then, since the result from the table does not match the chi-square test rules so there must be merging between cells that have an expected value of less than 5. Accordingly, these were grouped into two categories involving the combination of poor nutrition and malnutrition into poor nutrition, and the combination of good and more nutrition into poor nutrition, with the relationship scores as low and medium to low relationship.

For collection of the data, firstly, we asked the Public Health Centers about the schedule of Integrated Healthcare Center (IHC). Then, we collected data in the IHC. We also asked the local midwives for the participant's address who have met the inclusion criterion. If a respondent did not attend the IHC activities, we visited their home. For obtaining the informed consent, we met with participants and explained the objectives of the research, then gave the participants an informed consent sheet. The respondents completed the

Table 3. Characteristics of gender and nutritional status of children (n=39).

| Toddler characteristics | n (%) |
|-------------------------|-----------|
| Gender | |
| Boys | 25 (64.1) |
| Girls | 14 (35.9) |
| Nutritional status | |
| Poor Nutrition | 12 (30.8) |
| Malnutrition | 6 (15.4) |
| Good Nutrition | 19 (48.7) |
| More Nutrition | 2 (5.1) |

Table 4. Characteristics of gender and nutritional status of children (n=39).

| Toddler characteristics | Mean | SD | Min-Max |
|-------------------------|-------|------|----------|
| Age (month) | 27 | - | 22-33 |
| Weight (Kg) | 11.13 | 3.15 | 6.0-20.9 |
| Z-Score | -1.35 | - | - |

questionnaire accompanied by the researchers as facilitators through a Google sheet link formed. The duration of filling out this questionnaire was 30 minutes. This study was approved by the Ethical Committee from Faculty of Dentistry, University of Jember with ethical clearance No. 728/UN25.8/KEPK/DL/2019.

Data analysis was performed using SPSS Statistics 25 software (IBM Corp., Armonk, NY, USA). The categorical data were presented in numbers and percentages. The numerical data were presented in mean, standard deviation (SD), or median, and percentiles of 25% and 75%. A chi-square test was used to analyze the relationship between young fathers' age and their children's nutritional status with significance $p < 0.05$ and 95% confidence interval (CI).

3. Results

Table 1 shows the median age of the participants was 19 years and the minimum value was 17 years and the maximum value was 19 years.

Based on Table 2, most of the fathers' job were farmers (48.7%) and their last educational background was elementary school (53.8%). Based on Table 3, the median of age of the children was 27

Table 5. The correlation father-child relationship and nutritional status of children (n=39).

| Father-child relationship | n (%) | Children nutritional status | | χ^2 (p-value) | OR | 95% CI Min - Max |
|---------------------------|-------|-----------------------------|---------------|-----------------------|----|---------------------|
| | | Poor n (%) | Good n (%) | | | |
| Low | | 12 (80.0) | 2 (20.0) | 11.830 | 12 | 2.5 – 57.4 |
| High | | 6 (25.0) | 18 (75.0) | (< 0.001) | | |

months with the majority of participants being boys (64.1%) and the nutritional status among children was normal (48.7%).

Based on Table 4. the mean of weight of children was 11.13 kg with SD of 3.15, with a minimum body weight of 6.0 kg and a maximum body weight of 20.9 kg. Then, the z-score of children in Panti District based on the WHO AnthroPlus z-score measurement was -1.35.

Table 5 shows that there was a correlation between the child-parent relationship of young fathers and the nutritional status of their children ($\chi^2 = 11.830$; p-value = < 0.001). The high father-child relationship has 12 times higher chance of good nutrition of their children (OR = 12.0; 95% CI = 2.5 – 57.4). Based on the results of the Chi-square test, it shows in the table that there were 18 cells that have an expected value of less than 5 (90%). Again, as explained above in the Methods section, since the result from the table does not match the chi-square test rules so there must be merging between the cells that have an expected value of less than 5. Accordingly, these were grouped into two categories involving the combination of poor nutrition and malnutrition into poor nutrition, and the combination of good and more nutrition into poor nutrition.

4. Discussion

The target of Sustainable Development Goals (SDGs) is to end malnutrition in 2030.¹⁹ Nutrition status issues in Indonesia are still influenced by many factors, including the family. The ideal age for marriage by reproductive health is 21 years old for women and 25 years old for men.¹¹ The study involved 39 young fathers aged 17-19 years who have toddlers. The relationship between a father and their children can be high when young fathers are able to do their responsibility as the head of the household;

one of which may be to provide for their children's nutritional needs.

The low relation of a father with his children may be because he is not yet able to think like an adult and not able to handle problems in the household such as the economy, spouse, or having children.¹² Young fathers play a role in the decision-making, and can help in raising their children as an effort to improve the family's nutritional status.²¹

A study demonstrated that some young fathers who do not have parenting experience will try to participate in increasing the involvement in childcare.²¹ Besides, the responsibility of the young father is more oriented to protection, where the father may spend much time outside the house looking for work and fulfilling their financial obligations as a form of protection.²² Accordingly, the relationship between some fathers and toddlers may be relatively low. Therefore, there needs to be encouragement from the closest people and health workers so that young fathers can carry out their family functions and are expected to be able to manage time to interact longer with the family, especially for the healthy development of their children.

In this study, the nutritional status of most children was normal (48.7%). However, we found 30.8% of the children experienced malnutrition and 15.4% experienced less nutrition. These findings are higher than those compared the national data. A previous study showed that low income families have 2.3 times more chance to have toddlers with poor nutrition compared to high income families.^{22,24} The previous studies show that income affects the family's ability in fulfilling their nutritional needs, where if the family income is large, the family can have enough nutrition.²⁵

Our finding indicated that the majority of children were boys. Regarding the finding, the father said that he had a very close and affectionate

relationship with his son where other studies found that fathers had a better relationship with boys than daughters. A study found that young fathers are more comfortable caring for boys than daughters, because they have more experience being male.²⁶ Other studies state that mothers have high levels of stress when caring for teenagers and fathers will experience stress when caring for their babies.²⁷

Based on the results of this study, there is a correlation between the child-parent pattern of relationship and nutritional status in Jember Regency of Indonesia. The results of this study are in line with previous studies that found the paternal involvement will affect the nutritional status of a toddler.⁴ Fathers' involvement is not just about interacting with children, but they also must pay attention to the children's development, and be able to provide emotional closeness and comfort.²⁸ The relationship between father and child supports the improvement of nutritional status so that it can reduce the incidence of malnutrition.

This study has some limitations, namely the use of cross-sectional design that was adapted to the current conditions, which cannot be used to see a cause and effect experience. In addition, the number of participants used in this study was small and was conducted in only one place for a short period of time. Also, the characteristics of the participants used were broad such as sociodemographic data in general, so that if they are not carefully examined it can cause bias towards the results of the study. This study also only focused on the child and parent relationship, particularly for young fathers that may have some correlation with their children's nutritional status. Therefore, the future research needs to conduct a more in-depth study to analyze the other factors that influence the children's nutritional status among young fathers with a multicenter study and identify and measure many factors.

5. Conclusions

There is a correlation between the child-parent relationship of young fathers and the nutritional status of their children. The high relationship between fathers and their children is more likely to improve their children's nutritional status. Therefore,

to improve the nutritional status among the children, fathers should be more involved in child-parent relationship. Furthermore, qualitative studies are needed regarding the results of the father-child under five relationship with the nutritional status of their toddlers.

Acknowledgement

Infinite thanks to the University of Jember, especially the Faculty of Nursing, which has become a forum for demanding undergraduate studies through the Research Group Family and Health Care Studies that supported for research activities.

Conflict of Interest

There is no conflict of interest in this study.

References

1. Ministry of Health of Indonesia: Report of Basic Health Research of Indonesia. 2018. Available on https://kesmas.kemkes.go.id/assets/upload/dir_519d41d8cd98f00/files/Hasil-risikesdas-2018_1274.pdf. Accessed on 15 March 2019.
2. Susanto T, Adi RY, Rasni H, Susumaningrum LA & Nur KRM. Promoting children growth and development: a community-based cluster randomized controlled trial in rural areas of Indonesia. *Public Health Nurs.* 2019; 36(4):11.
3. Sary MP & Turnip SS. Attitude difference between fathers and mothers toward fathers involvement in child rearing activities among couples with 0-12 months old babies. *Community based study in a primary health care setting. Procedia - Soc. Behav. Sci.* 2015;190:92–96.
4. Kansiime, N., Atwine, D., Nuwamanya, S. & Bagenda, F. Effect of male involvement on the nutritional status of children less than 5 years: a cross sectional study in a rural Southwestern District of Uganda. *J. Nutr. Metab.* 2017;1,1–9.
5. Geberselassie, S. B., Abebe, S. M., Melsew, Y. A., Mutuku, S. M. & Wassie, M. M. Prevalence of stunting and its associated factors among children 6-59 months of age in Libo-Kemekem district, Northwest Ethiopia: a community based cross sectional study. *PLoS ONE* 2018;13(5):1–11.

6. Batiro, B., Demissie, T., Halala, Y. & Anjulo, A. A. Determinants of stunting among children aged 6-59 months at Kindo Didaye Woreda, Wolaita Zone, Southern Ethiopia: unmatched case control study. *PLoS ONE* 2017;12:1–15.
7. Department of Demographic Affairs of East Java of Indonesia. *Statistic of Young Age in East Jawa for 2018*. 2018.
8. Ministry of Law of Indonesia. *Statute of Regulation of Indonesia No. 16 in 2019 about Marriage in Indonesia*. 2019 Available on <https://peraturan.bpk.go.id/Home/Details/122740/uu-no-16-tahun-2019>. Accessed on 30 April 2020.
9. Rumble, Lauren & Peterman, Amber & Irdiana, Nadira & Triyana, Margaret & Minnick, Emilie. An empirical exploration of female child marriage determinants in Indonesia. *BMC public health*. 2018; 18:407.
10. Buzome, C., Nebechi Ugwu, H. & Radietu, M. A. Early child marriage in Nigeria: causes, effects and remedies. *Sos. Sci. Res.* 2018;4(1):49–66.
11. National of Family Health Planning of Indonesia. *Regulation of Family Planning*. 2015. Available on <https://jdih.bkkbn.go.id/produk/detail/?id=13>. Accessed on 30 April 2020.
12. Ndiaye, K. et al. Using an ecological framework to understand parent-child communication about nutritional decision-making and behavior. *J. Appl. Commun. Res.* 2013;41:253–274.
13. Latifah N, Susanti Y & Haryanti D. Correlation between family support and nutritional status among under-five. *J. Keperawatan*. 2018;10(1),68–74.
14. Setyowati NP, Rasni H & Dewi EI. The correlations of family father's role with for participation of DPT immunization of 2-24 month. *Artik. Ilm. Has. Penelit. Mhs. Univ. Jember*. 2013. Available on <http://repository.unej.ac.id/bitstream/handle/123456789/60661/Nanik%20Putri%20Setyowati.pdf?sequence=1&isAllowed=y>. Accessed on 3 May 2020.
15. Balqis SW & Rahayuningsih SI. Father role in the fulfilling of babies basic needs. *JIM FKPEP*, 2018;3(3): 83–92. Available on <http://jim.unsyiah.ac.id/FKpep/article/viewFile/8380/5162>. Accessed on 5 May 2020.
16. Driscoll, K. & Pianta, R. C. Mothers and fathers perceptions of conflict and closeness in parent-child relationships during early childhood. *J. Early Child. Infant Psychol.* 2011;7: 1–24.
17. World Health Organization. *WHO AnthroPlus for Personal Computers Manual: Software for Assessing Growth of The World's*. 2009. Available on https://www.who.int/childgrowth/software/anthro_pc_manual_v322.pdf Access on 5 May 2020.
18. Arrumdias AA, Marianti S & Rachmayani D. An analysis child-parent relationship with problematic media use. *J. Interaktif*. 2010;12(1):15–26.
19. bpsF. *UNICEF Annual Report 2015*. July 2016. 2015. Available on https://www.unicef.org/publications/files/UNICEF_Annual_Report_2015_En.pdf. Accessed on 5 May 2020.
20. Zhang B, Zhao F, Ju C & Ma Y. Paternal involvement as protective resource of adolescents' resilience: roles of male gender-role stereotype and gender. *J. Child Fam. Stud.* 2015;24(7):1955–1965.
21. Kadir A. *The role of father for adolescent children*. Thesis. 2019. Available on <http://eprints.ums.ac.id/73671/>. Accessed on 8 May 2020.
22. Harmaini, Shofiah V & Yulianti A. The role of fathers as teacher. *J. Psikolog.* 2014;10(2):80-85. Available on <http://ejournal.uin-suska.ac.id/index.php/psikologi/article/view/1184/1076>
23. Wardani GAP. *The correlation of characteristic of mother and family income with nutritional status among under-five children in Yogyakarta*. Thesis. 2016. Available on <http://digilib.unisayogya.ac.id/1995/1/NASKAH%20PUBLIKASI.pdf>
24. Mulazimah. *The correlation between family income and nutritional status among under-five children in Ngadiluwih of Kediri*. *J. Effector*. 2017;30(4):18–21.
25. Aprilia L. *The influence of family income of family and education for family consumption among poverty family on the perspective of Islam*. Thesis. 2019. Available on <http://repository.radenintan.ac.id/5705/>
26. Planalp EM & Braungart-Rieker JM. Determinants of father involvement with young children: evidence from the ECLS-B. *J. Fam. Psychol.* 2016;

- 30:135–146.
27. Roeters A & Gracia P. Child care time, parents' well-being, and gender: evidence from the American Time Use Survey. *J. Child Fam. Stud.* 2016;25:2469–2479.
28. Bunga BN & Kiling IY. Perception of community leader for father involvement in caring of children. *Jurnal Ilm. Visi.* 2017;12(1):9–18.

Development of an emergency volunteer-based call center for COVID-19 within the university setting

Hayu Qaimamunazzala

Department of Health Behavior, Environment, and Social Medicine, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada

SUBMITTED: 21 December 2021 REVISED: 16 November 2022 ACCEPTED: 22 November 2022

KEYWORDS

Call center
COVID-19
Pandemic response
Volunteer

ABSTRACT In response to concerns in the general public due to the Coronavirus Disease 2019 (COVID-19) pandemic, Universitas Gadjah Mada established a COVID-19 call center with the aid of volunteers. This study aims to describe the experience of developing and implementing an emergency volunteer-based call center addressing questions on COVID-19 by a higher academic institution along with the frequency and characteristics of the received calls in 2020. This descriptive observational study was conducted using secondary data to describe the implementation of a call center on COVID-19 at Universitas Gadjah Mada (UGM) between March and December 2020. Data were collected from organization documents and the caller response database. The data were analyzed descriptively. The development process included system development, volunteer recruitment, online training, and implementation. The volunteers logged a total of 150 calls during the 10-month study period. The highest frequency of calls was in March 2020 with 35 calls and the lowest was in August 2020 with only 3 calls. The majority of callers were from Yogyakarta and members of the UGM community. The main issues raised by callers were people seeking general information regarding COVID-19, recommendations regarding their health status, government and university policy related concerns, and logistics. Tele-outreach is a beneficial method to address public distress during a global pandemic, which could be managed with the aid of trained volunteers.

© The Journal 2022. This article is distributed under a [Creative Commons Attribution-ShareAlike 4.0 International license](https://creativecommons.org/licenses/by-sa/4.0/).

1. Introduction

In December 2019, news of an emerging disease spreading in Wuhan, China broke out. Public response toward the novel coronavirus, SARS-CoV-2, varied from panic to underestimation of its extent. Information regarding its transmission, signs and symptoms, and therapy evolved rapidly and often counteracted previous knowledge. As a result, there was confusion among the general public. This was further amplified due to the increasing use of social media in the digital era since numerous false claims were spreading rapidly through multiple platforms.

Current evidence indicates the popularity

of misinformation or 'fake news' on the Internet compared to accurate information.¹ The phenomenon grew to become the world's first coined 'infodemic'. In Indonesia, misconceptions also flourished as the government was initially hesitant and underplayed the potential risks of this disease.² As feelings of uncertainty grew, members of the general public actively searched for correct up-to-date information from reliable sources.

Indonesia is a country with a fairly high social capital. The concept of gotong royong, or mutual assistance within society is echoed through much of the country's daily life and community support efforts in response to disasters have proven to be beneficial in previous cases of natural disasters.³ Prior studies have also indicated potential benefits of assembling volunteer groups in response to the Coronavirus Disease 2019 (COVID-19), though most

*Correspondence: hayu.qaimamunazzala@ugm.ac.id
Department of Health Behavior, Environment, and Social Medicine, FK-KMK, Jl. Farmako, Sekip Utara, Kec. Depok, Kabupaten Sleman, Daerah Istimewa Yogyakarta 55281.

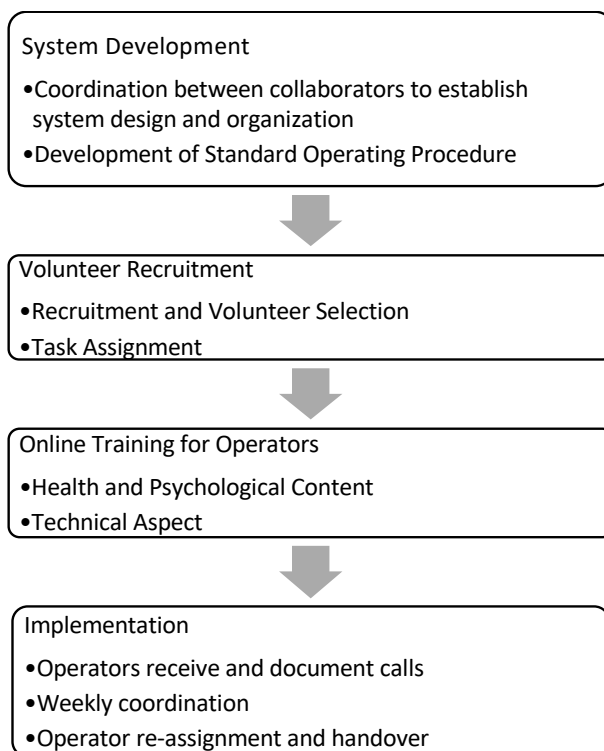


Figure 1. Development and implementation process.

reported student-based initiatives were exclusive to medical or other health-related backgrounds.^{4,5} In addition, the infectious nature of COVID-19 poses health concerns to volunteers and the need for safe and physically distanced organization is essential for public safety. Tele-outreach is a favorable option to attempt due to its limited need for physical contact. There is recent evidence for its beneficial use in psychological support and to reduce social isolation during the COVID-19 pandemic.^{6,7}

Universitas Gadjah Mada (UGM) is a state-owned university in Indonesia which has declared itself as a Health Promoting University (HPU). HPUs generally commit to protect and improve the state of health and well-being of the university staff and students through various programs.⁸ However, not all universities adopt the concept in the same manner.

In early March 2019, simultaneous with the first reported cases of COVID-19 in Indonesia, units in UGM received numerous calls from members of the university and the general public. Due to the novelty

of the disease and consequent lack of information, the units were overwhelmed with questions and there was a need for an emergency team to aid in addressing concerns from the university and surrounding community. In alignment with the goals to increase health literacy and create a healthy environment in the university and surrounding community, a call center was developed in UGM to address misconceptions regarding COVID-19 and provide a line of communication for the public with the university. This article describes the experience of developing and implementing an emergency volunteer-based call center addressing questions on COVID-19 by a higher academic institution.

2. Methods

This descriptive observational study aimed to describe a practical example of developing and implementing an emergency call center on COVID-19 at UGM in 2020 during the first ten months of the pandemic. It will also illustrate the characteristics of the callers and the information requested.

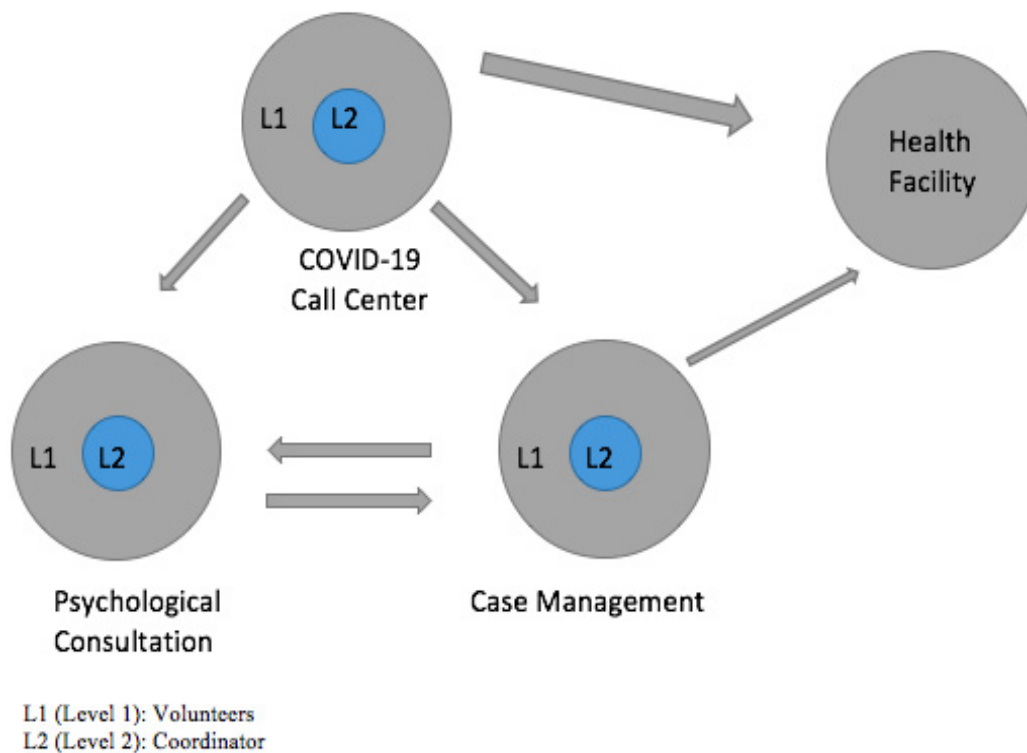


Figure 2. UGM COVID-19 call center referral system.

Secondary data on the development process between March 23th, 2020 and December 31st, 2020 were collected from the call center organizational documents which included meeting notes and digital media. Data on the characteristics of calls were collected from the caller response database which was used to store information on calls from the public. The caller response database details whether callers were members of the UGM community, the caller location, the nature of the calls and the questions, and whether callers needed follow-up. Types of questions were also categorized by operators as general information on COVID-19, screening and case follow-up, relating to policy, and other concerns.

The data were then analyzed descriptively to provide a summary of the process and characteristics of calls. This study received ethical clearance from the Medical and Health Research Ethics Committee, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada.

3. Results

The UGM COVID-19 Call Center as a communication hotline was established in late March 2020. It was developed and organized by a collaboration between the HPU and Public Relations units, members of university faculty and the UGM Academic Hospital with the aim to provide communication and education on COVID-19. The process included system development, volunteer recruitment, volunteer training, and implementation. Figure 1 summarizes the steps in developing of the program. Volunteers from members of university staff, students and alumni were recruited and trained as operators. The operators worked remotely with the use of smartphones in order to maintain physical distancing. Operators received phone calls relating to COVID-19 and documented the questions through an online form.

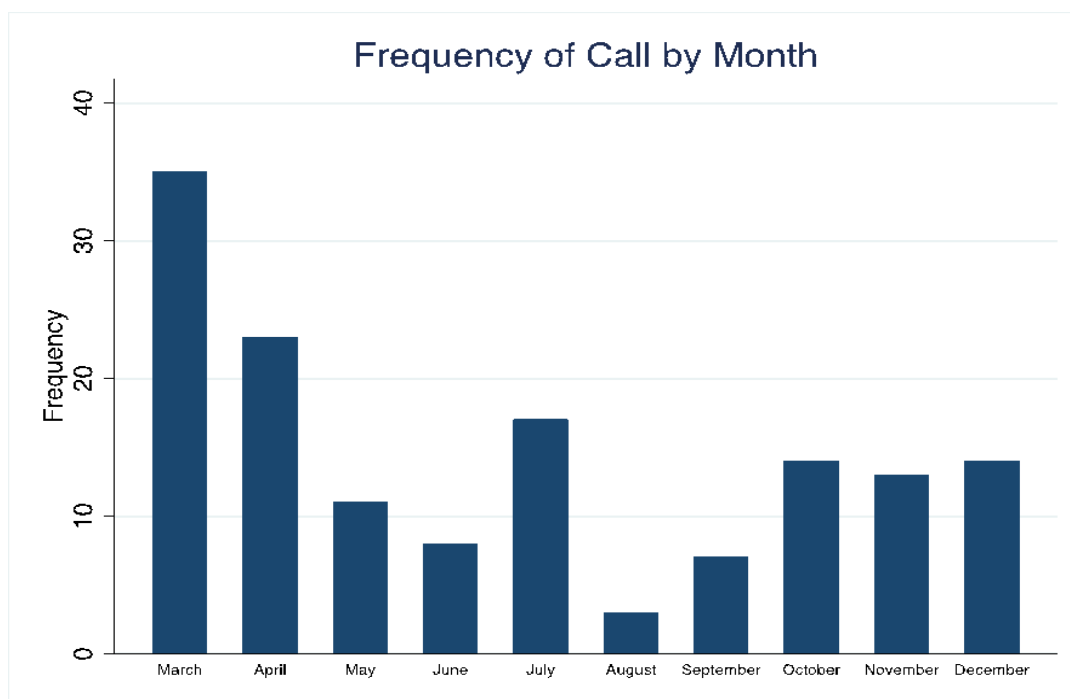


Figure 3. Frequency of calls by month.

3.1 System development

A system was developed through coordination between the HPU and Public Relations units, members of university faculty and the UGM Academic Hospital. The system placed at the call center is based on three levels (Figure 2). The first level consists of volunteers who are tasked with receiving phone calls on a daily basis. On the second level are the coordinators who respond to unanswered questions or refer questions and concerns to higher levels or other services.

The third and highest level consists of policy makers from the university. Since the call center is only one of the divisions addressing COVID-19 in UGM, an external referral system was also developed in the event a caller needs follow-up on COVID-19 symptoms, psychological management or if there are policy-related issues.

A standard operating procedure (SOP) was written by lecturers from the Faculty of Medicine, Public Health and Nursing, UGM and served as a working document which was routinely updated. The SOP served to guide volunteers in answering calls appropriately with adequate information. The

document was shared online and volunteers were given access to read it.

3.2 Recruitment

Volunteers were recruited through online open recruitment. Flyers were released through social media groups among university students and alumni and uploaded to the various social media handles owned by UGM. Enrolled volunteers were sorted into different tasks based on their educational background and interest. Volunteers from health-related backgrounds were initially prioritized for the call center due to the expected better understanding of health guidelines. However, due to limited availability of volunteers with health-related backgrounds, volunteers with other backgrounds were also included.

3.3 Training

Volunteers were trained through a series of online training sessions. Lecturers from the Faculty of Medicine, Public Health, and Nursing, UGM taught volunteers in the latest updates about COVID-19

Table 1. Characteristics of callers.

| Characteristics | Number of calls answered by volunteers |
|----------------------|--|
| Location | |
| Yogyakarta province | 119 (80%) |
| Other provinces | 30 (20%) |
| Background | |
| UGM student or staff | 101 (78%) |
| General public | 48 (32%) |

Table 2. Issues raised by callers.

| No | Category | Description |
|----|-------------------------------|--|
| 1. | General Information | Information regarding COVID-19 symptoms, transmission, prevention, testing facilities, and issues developing in the media |
| 2. | Screening and Case Management | Callers reporting signs and symptoms of COVID-19. This is often accompanied by questions regarding when and where they should get tested and how to access the facilities. |
| 3. | Government policy | Requesting information related to local and national government policy. Many callers inquired about steps they must take when entering or leaving provincial borders. |
| 4. | University Policy | Requesting information related to latest university policies such as availability of testing and isolation facilities for students and staff, safety protocols and considerations for academic procedures. |
| 5. | Logistics | Logistical issues including students and staff in need of help and callers reporting donations by external parties. |

and how to answer questions according to the SOP. A session on the basics of psychological first aid was also given by a lecturer from the Faculty of Psychology, UGM in order to provide adequate response to callers under difficult situations. Trainers also held role plays to allow volunteers to practice answering phone calls with different scenarios. In addition, volunteers were trained in operating the smartphones and logging phone call details to the database.

3.4 Implementation

A total of 27 volunteers were recruited as operators during the period between 23 March – 31 December 2020. However, only 10 operators were assigned at a time and equipped with smartphones connected to 1 mutual line. Smartphones were handed out by a member of the university staff, and volunteers worked remotely from their homes. The schedule was divided into 5 shifts throughout the day and 2 operators were posted during each shift.

After answering each call, volunteers would submit call details to the database through an

online form. Questions that volunteers were unable to answer were referred to the coordinator to be directed to higher officials. Weekly handovers were done on Mondays for volunteers who could not extend their participation and needed to be replaced. However, volunteers were permitted to end their participation at any time.

3.5 Summary of calls received by the COVID-19 call center

Over the course of 10 months, volunteers logged a total of 150 answered calls from members of UGM and the general public. The number of calls peaked at the first week of opening with 35 calls and decreased over a course of a few months. In July there was a sudden increase with 17 calls, which was followed by a relatively low numbers in August and September with 3 and 7 calls, respectively. Between October and December, the number of calls began to grow steadily (Figure 3). A majority of the callers were located in Yogyakarta (80%) and belonged to the UGM community (78%). Table 1 shows more details concerning the caller characteristics.

Most callers raised concerns regarding

COVID-19 symptoms, testing facilities and health recommendations. All cases with indication of COVID-19 risks among the UGM community were referred to the case-management team. Referral to psychological counselling was also offered to callers and noted in the database. Questions regarding government and university policies were also frequently expressed. A summary of issues raised by callers is displayed in Table 2.

4. Discussion

The COVID-19 pandemic has generated large concern from the general public and there are potential benefits from tele-based information services to address misinformation. This study described how a university has developed an emergency call center operated by volunteers to educate and communicate with the public on COVID-19. The program was developed through collaboration between units in the university. Volunteers from the university staff, students, and alumni were recruited and trained to answer phone calls according to a continuously updated SOP. Between the months of March and December 2020, operators responded to and documented 150 calls.

This call center was initiated by UGM as an HPU to facilitate education and communication regarding COVID-19 for the staff and students along with the general public. A health promoting setting seeks to improve health of the wider community where it stands in addition to integrating health promotion into routine activities and provide a healthy working environment within the institution itself.⁸ The Okanagan Charter raised two calls to actions for universities which were to embed health into all aspects of the campus and to lead in health promotion actions in the local and global contexts.⁹ This study has shown that the center has managed to reach outside of the university community since approximately 32% of callers were from the general population.

The implementation of such a program highlights the level of social capital in the university community. Social capital is defined by the value attained through social networks and a community with high social capital can be identified by its strong

relationships and active participation of its people.¹⁰ In this case, the study found that a network of volunteers consisting of university staff and students rapidly organized themselves to address a common problem.

According to Putnam, the strong presence of civic engagement can result in volunteering and other acts of aiding.¹⁰ Although still heavily debated, many suggest that such mobilization of social capital in communities may lead to improved health status.¹¹ Additionally, student volunteers in times of disasters have previously shown benefits to the organization and to the student volunteers themselves. Studies have showcased the roles students can play, from tele-outreach to aiding in the health care facilities.^{4,12} Student volunteers have also identified direct benefits such as increased self-confidence, professional experience for their portfolio, satisfaction that they have assisted the community, and skills development.^{12,13}

The vast spread of misinformation was a major public health issue which needed addressing throughout the early period of the pandemic. This study identified an organized attempt to address questions from the public and the types of information they were seeking in order to educate and increase awareness on COVID-19. Future efforts may benefit from the lessons learned throughout this process.

Several challenges appeared throughout the process of developing and implementing the program. The call center was designed under the premise of an emergency unit to provide temporary assistance for existing divisions and not intended for long-term implementation. It employed a separate phone line from the university system which therefore did not allow operators to directly forward calls to other units in the university.

Referrals and questions were communicated manually by the members of the team and callers would then be contacted by the related services. Without a defined space or line of communication within the current university system, it was unclear as to how long the program should remain viable and how to coordinate effectively and efficiently with other units. This was a vital matter because

much of the information being addressed by callers was related to implementation of policies in different units around the university. As the situation shifted from the pandemic state of emergency toward return to routine activities, discussions began for transition to more established units.

Another prominent challenge was staying current with the rapid development of information, recommendations, and policies related to COVID-19. Updating the SOP and operator knowledge according to each development was key in providing timely information to the public. Da Silva et al reported an approximate number of 23,634 papers published within the first six months of the pandemic.¹⁴ This ultimately led to a similar surge in the number of policies being adopted globally.

The SOP evolved according to the questions logged by operators and related information being released by the HPU unit. Unfortunately, the center did not have a direct line of communication with the government. Specific questions related to national or regional policies had to be retrieved through a long line of communication with higher level university officials. Future programs would benefit from establishing a direct line of communication with government officials since the development phase.

As time progressed, volunteer retention became a new problem. Although the use of smartphones allowed operators to work from their own homes, the program required that operators stayed within close proximity with the university. The turnover rate in the first month of the program was relatively quick as many of the student recruits returned to their hometowns due to their engagement in online learning. The coordinators have made efforts to sustain the active volunteers by holding routine discussions to communicate issues volunteers were facing and making adaptations to the work load accordingly.

The number of callers fluctuated as interest in COVID-19 grew at the beginning of the pandemic, and then decreased in August – September. This trend quite possibly suggests a development from heightened information seeking behavior at the early periods of the pandemic which decreased as the public familiarized themselves with the disease.

By the end of the year, there was a sharp increase in COVID-19 cases in Yogyakarta which coincided with a similar increase in the number of callers.

The majority of issues raised were dominated by screening and management related questions. Most callers consulted about their health and described their symptoms. This was often followed-up by questions on procedures for testing and further management at health care facilities. For the UGM community, these suspected cases would be referred to the case management team and university owned health care facilities for follow-up screening and management by medical professionals. There are several possible explanations behind the large proportion of questions.

Previous studies have cited tendencies for delay in accessing health-care due to fear of contracting COVID-19 at the facilities.^{15,16} Non-urgent inpatient visits have also been discouraged in order to decrease the strain on the health care system and allow optimal management for higher risk cases.¹⁷ As a result, there is a possible increase in access to telemedicine and other telecommunication services for health-related consultations.

A large proportion of questions regarding policies also highlights the need for improved communication accompanying changes in university and public policy. Most questions raised by the UGM community were related to protocols for academic procedures. There were also frequent questions by the general public related to requirements for mobility between provinces. Although there have been government and public health efforts to communicate policies and health recommendations through digital platforms, much of the communication was one-directional information dissemination. Physical distancing has also limited the benefits of traditional face-to-face education programs which allow recipients to directly engage and consult with authorities.¹⁸

The Indonesian government has previously established COVID-19 hotlines in the national and regional levels, which could explain the lower utilization from the general public compared to the university community. Nevertheless, the availability of operators in addressing their questions has played an important role in providing practical advice for

the public to implement and reduce the load of government facilities. A higher use by the university's community suggests the need for improved bi-directional communication regarding their policies.

5. Conclusions

The purpose of this article was to describe the experience of developing a volunteer-based call center within the university setting during a state of emergency. Tele-outreach is a beneficial method to address public distress during a global pandemic, which could be managed with the aid of trained volunteers. The main issues raised were people seeking information on their health status and recommendations for management, followed by questions regarding local and university policies.

Acknowledgement

The author would like to thank the Health Promoting University Unit at Universitas Gadjah Mada and express gratitude toward the staff and volunteers who have dedicated their time and attention to provide call center services.

Conflict of interests

The author would like to declare there are no conflicting interests.

References

1. Wang Y, McKee M, Torbica A, Stuckler D. Systematic literature review on the spread of health-related misinformation on social media. *Soc Sci Med*. 2019;240(August).
2. Djalante R, Lassa J, Setiamarga D, Sudjatma A, Indrawan M, Haryanto B, et al. Review and analysis of current responses to COVID-19 in Indonesia: period of January to March 2020. *Progress in Disaster Science*. 2020;6:100091.
3. Mardiasmo, D., & Barnes PH. Community response to disasters in Indonesia: Gotong Royong; a double edged-sword. *Proceedings of the 9th Annual International Conference of the International Institute for Infrastructure Renewal and Reconstruction*. 2015;301–7.
4. Santos JJ, Chang DD, Robbins KK, Cam E Le, Garbuzov A, Miyakawa-Liu M, et al. Answering the call: medical students reinforce health system frontlines through Ochsner COVID-19 hotline. *Ochsner Journal*. 2020;20(2):144–5.
5. Office EE, Rodenstein MS, Merchant TS, Pendergrast TR, Lindquist LA. Reducing social isolation of seniors during COVID-19 through medical student telephone contact. *J Am Med Dir Assoc*. 2020;21(7):948–50.
6. Ravindran S, P LN, Channaveerachari NK, Seshadri SP, Kasi S, Manikappa SK, et al. Crossing barriers: role of a tele-outreach program addressing psychosocial needs in the midst of COVID-19 pandemic. *Asian J Psychiatr*. 2020;53(April):102351.
7. Wang J, Wei H, Zhou L. Hotline services in China during COVID-19 pandemic. *J Affect Disord*. 2020; 275: 125-126.
8. Tsouros AD, Dowding G, Thomson J, Dooris M. *Health Promoting Universities. Concept, Experience and Framework for Action*. WHO Regional Office for Europe. Copenhagen; 1998.
9. International Conference on Health Promoting Universities & Colleges (7th : 2015: Kelowna (B.C.). *Okanagan Charter: An International Charter for Health Promoting Universities and Colleges*; 2015.
10. Putnam RD. *Bowling Alone: The Collapse and Revival of American Community*. Simon and Schuster; 2000.
11. Eriksson M. Social capital and health--implications for health promotion. *Glob Health Action*. 2011; 4:5611.
12. Bazan D, Nowicki M, Rzymiski P. Medical students as the volunteer workforce during the COVID-19 pandemic: Polish experience. *Int J Disaster Risk Reduct*. 2021;55(February).
13. Pongponrat, Kannapa. University volunteer programs for post-disaster recovery: The case of post-tsunami Japan. *Kasetsart Journal of Social Sciences*. 2021. 42: 31-36.
14. Teixeira da Silva JA, Tsigaris P, Erfanmanesh M. Publishing volumes in major databases related to COVID-19. *Scientometrics*. 2020;126(1):831–42.
15. Laura E. Wong; MD; PhD; Jessica E. Hawkins; MEd; Simone Langness; Karen L. Murrell;

- Patricia Iris; MD & Amanda Sammann; MPH. Where are all the patients?: addressing COVID-19 Fear to Encourage Sick Patients to Seek Emergency Care. *NEJM Catal.* 2020; (Figure 1):1–12.
16. Lazzerini M, Barbi E, Apicella A, Marchetti F, Cardinale F, Trobia G. Delayed access or provision of care in Italy resulting from fear of COVID-19. *Lancet Child Adolesc Health.* 2020; 4(5):e10–1.
 17. Garrafa E, Levaggi R, Miniaci R, Paolillo C. When fear backfires: Emergency department accesses during the COVID-19 pandemic. *Health Policy (New York).* 2020; 124(12):1333–9.
 18. Clark-Ginsberg A, Petrun Sayers EL. Communication missteps during COVID-19 hurt those already most at risk. *J Contingencies Crisis Manag.* 2020; 28(4):482-484.

Cultural perceptions of child abuse in terms of parents' perspective: a qualitative study in Bandung-Indonesia

Reizkiana Feva Kosmah Dewi,¹ Sri Endah Rahayuningsih,¹ Viramitha Kusnandi Rusmil,¹ Eddy Fadlyana,¹ Kuswandewi Mutyara,² Nita Arisanti,² Nanan Sekarwana,¹ Meita Dhamayanti¹

¹Department of Child Health Faculty of Medicine, Universitas Padjadjaran, Bandung Indonesia

²Departement of Public Health Faculty of Medicine, Universitas Padjadjaran, Bandung Indonesia

SUBMITTED: 19 February 2021 REVISED: 02 October 2022 ACCEPTED: 23 November 2022

KEYWORDS

Child abuse
Cultural perceptions
Focus group discussion
Parents

ABSTRACT Child abuse (CA) is a serious problem and difficult to detect. According to World Health Organization, CA is responsible for 950,000 deaths of children. Many various cultural norms may affect CA. This research aims to determine the cultural perceptions of child abuse in terms of parents in Indonesia. A qualitative study using focus group discussions (FGDs) was conducted with 31 parents who were selected purposively. The FGDs centered on the CA definition, classification, frequency, level of CA (mild, moderate, and severe), and the difference between violence and discipline. The FGDs were divided into three groups based on level of education completed: elementary and junior high school, senior high school, and bachelor's degree. The process of the FGDs was recorded, transcribed, and analyzed using manifest qualitative content analysis. This study was conducted from December 2018 to April 2019 in Pamekaran, Soreang Bandung. Every culture in Indonesia perceived that CA is a form of parents' emotion that could injure children physically and mentally. Indonesian cultures were not familiar with neglect and exploitation. Participants' opinions regarding level of violence can be categorized as severe if leaving wounds, and needing to be hospitalized. The parents assumed there was CA if it occurred more than twice and/or leaving marks. The discipline purpose is not to mistreat, but for protecting their children's life, building characters, and educating the children. In conclusion, a cultural perception of parents about CA is a form of parents' emotion which leads to injury of children physically and mentally.

© The Journal 2022. This article is distributed under a [Creative Commons Attribution-ShareAlike 4.0 International license](https://creativecommons.org/licenses/by-sa/4.0/).

1. Introduction

Child abuse (CA) is a serious problem and difficult to detect. Early detection and intervention are important to resolve maltreatment in children, which if left untreated can damage their development.¹⁻⁴ In the United States, as many as 4.3% of children younger than 18 years were reported to be victims of maltreatment. In 2019, a national estimate for maltreatment reported was 4.4 million (4,378,000). The national rate of screened-in referrals (reported) was 32.² per 1,000 children in the national population. Child fatalities are the most tragic consequence of maltreatment. It was estimated nationally that 1,840 children died caused by abuse and neglect with a rate

of 2.50 per 100,000 children in the population.⁵

In the East Asia and Pacific region, the estimates show that violence against children is widespread across the region, with 17–35% prevalence for both boys and girls.⁵ A meta-analysis for prevalence of CA and neglect in the world showed that according to self-reports, 127/1000 cases came from sexual abuse, 226/1000 from physical abuse, and 363/1000 for emotional abuse.⁶

According to the Child Protection Commission of Indonesia (KPAI) from 2011 to 2015 CA increased. Based on an Indonesian national survey in 2012, results showed that 91% children suffered from CA in their family, 87.6% in their school, and 17.9% in their community. West Java was one province with a high prevalence of CA. Therefore, the West Java Government in 2016 declared "Jabar Tolak Kekerasan" or "West Java No Violence". Some

*Correspondence: meita.dhamayanti@unpad.ac.id
Department of Child Health, Faculty of Medicine, Universitas Padjadjaran, Jl Pasteur 38, Bandung, 40161, Indonesia.

districts in West Java with high violence included Sumedang District, Cirebon District, Bandung District and Purwakarta District.⁷⁻⁹ Bandung ranks second after Jakarta according to KPAI data in 2011/2016, with 4,605 cases.¹⁰

Child abuse is a significant problem which will influence all individuals from every culture.^{11,12} There are various and diverse cultures and ethnic groups in the world. Indonesia consists of five major islands (Sumatra, Java, Sulawesi, Borneo and Papua) and about 30 smaller groups, and has various ethnic groups, such as Sumatra (Aceh, Batak, Padang, Palembang), Java (Sunda, Central Java, East Java), Madura, Bali, Bugis, et cetera. Ethnic groups are a culture with a distinctive style, who are a group of people bound by awareness and identity of "cultural unity", whereas these are often (but not always) reinforced by the unity of language. The seven elements which are the main contents of each culture can be found in all nations of the world, namely: language, knowledge systems, social organizations, systems of living and technology, livelihood systems, religious systems and arts. Unity of culture is not something that is determined by outsiders, but by citizens of the culture concerned.¹³

Culture influences violence. The perceptions towards the violence is very subjective, based on cultural norms, which depend on the people's beliefs, perspectives, values, or attitudes.^{14,15} Culture (budaya) came from Sanskrit, *bhudhayah*, which is the plural form of *budhi* which means *budi* (mind) or *akal* (sense) in Bahasa Indonesia. Culture is defined as the whole system of ideas submission, action, and human creation in human's life which came from the humans by learning.^{13,16,17} All cultures are influenced by normative customs in defining basic principles in nurturing and caring for children.^{18,19}

Cultural diversity exists in the world, for example in Ecuador, mothers believe that baby boys should be given breast milk for longer duration than baby girls. The babies who have fever, diarrhea, and excessive crying are not seen by a doctor, but undergo a submerging practice called "holding back" involving lowering the baby's head into water. Previous research regarding "ngayun budak" or the 'rocking slave' in Indonesian cultures in Cicinde

village, Karawang, West Java, identified that this tradition was a ritual which is performed when the baby is 7 days after been born. Basically, this practice is dangerous since it poses a risk of hypoxic ischemic encephalopathy.²⁰

Research showed that childcare practices will influence the behavioral and emotional problems in children.²¹

Cultural practices must be reassessed if they are irrelevant.²² Every culture in Indonesia is expected to enforce discipline without violence. Violence and discipline efforts could overlap if performed incorrectly. Punishment could lead to physical and/or emotional abuse, if performed with anger or desperation that does not support children to behave. Most parents shape children's behavior through discipline. Physical punishment, such as hitting, is used as a form of discipline method in almost every country.²⁴⁻²⁶

The International Society for the Prevention of Child Abuse and Neglect (ISPCAN) questionnaires about CA, include the ISPCAN Child Abuse Screening Tool (ICAST) and ICAST-C (ISPCAN - Children's version) which has been used in pilot projects in children aged between 12-17 years old in 4 countries and translated into 6 languages. To date, questionnaires to screen and detect early CA have been developed to Bahasa Indonesia and the validity and reliability have been measured.²⁷⁻²⁸ However, ICAST-C does not provide violence frequency and severe to mild violence grouping (which are influenced by the Indonesia cultural diversity). This is expected to contribute in the reporting system and management of CA in Indonesia. The aim of this study was to define the cultural perceptions of CA among parents in Indonesia. This research is expected to provide data for prevention programs of CA in a culturally diverse population.

2. Methods

The qualitative study was conducted by employing focus group discussions (FGDs) technique. The qualitative content analysis (QCA) was chosen for its potential to enable identification and exploration of cultural perceptions of CA among parents in Indonesia. The term FGDs refers to a method of data

Table 1. Characteristics of FGDs participants.

| Characteristics | Details | Number (%) |
|------------------------|--------------------|------------|
| Sex | Male | 9(29) |
| | Female | 22(71) |
| Age | ≤50 years | 27(87) |
| | >50 years | 4(13) |
| Number of children | ≤2 | 10(32.2) |
| | >2 | 21(67.8) |
| Number of siblings | 1 | 3(9.6) |
| | >1 | 28(90.4) |
| First child/last child | Eldest child | 7(22.6) |
| | Youngest child | 1(3.2) |
| Parenting history | Parents | 27(87) |
| | Mother | 1(3.2) |
| | Brother/Sister | 2(6.4) |
| | Adoptive parents | 1(3.2) |
| Parents education | Junior high school | 9(29) |
| | Senior high school | 11(35.5) |
| | Bachelor's degree | 11(35.5) |
| Occupation | Entrepreneur | 19(61.3) |
| | Laborer | 2(6.3) |
| | Private employees | 4(13) |
| | Housewife | 6(19.4) |
| Income | Low | 22(71) |
| | Average | 9(29) |

FGDs, focus group discussions.

collection that involves inviting people of similar backgrounds to discuss a research topic.^{29,30-31} This study was performed from December 2018 to April 2019 in the village office Pamekaran, Bandung District. The study setting was chosen because the prevalence of CA in the village is highest compared with other villages in the district and there are volunteers who were trained in prevention of CA.

The participants were 31 parents of an adolescent who were collected purposively and approached face-to-face by the researcher (RF). The number of respondents represents the various cultures of the existing society in the study setting. The participants were divided into 3 groups based on education level, such as elementary/junior high school, senior high school, and parents with bachelor's degree or equals. Grouping was done to ensure all participants could actively take part in conversations and to provide a more intimate setting, where no one felt their knowledge was better than the other participants and a secure atmosphere was

conducive for discussions.

The participants were invited considering their cultural backgrounds such as Javanese (Central Java and East Java), Sundanese, Betawi, Batak, Padang, Palembang, Riau, Bangka, Lampung, Madura, Bali, Sulawesi, East Nusa Tenggara (ENT), and Papua. Each group was analyzed at a different time. The permission to conduct the research was granted from the authorities of National and Political Unity Agency of West Java, Bandung District Health Office.

Inclusion criteria were literate, fluent in Bahasa Indonesia, and willing to be a respondent. Exclusion criteria were parents who cannot communicate well and were not cooperative. Informed consent was obtained from all participants. The study was approved by the Research Ethics Committee of Universitas Padjadjaran, 1332/UN6.KEP/EC/2018.

Three FGDs were performed using open questions which encourages the subjects to express their perceptions and views regarding CA. Each FGD was conducted for approximately 60 minutes duration and recorded. FGDs were performed in the community building. Facilitators for the FGDs consisted of moderators, note takers, and observers. The moderators (NA, KM) were trained in conducting FGDs. A list of questions for the interviews was developed based on the literature review.

Data were analyzed through transcription by writing interview results into narration; coding; inputting coded data into computer program based; cleaning by rechecking the codes, theme organization, and data interpretation. Qualitative Content Analysis (QCA) was used to analyze the transcription.^{29,31} Thematic analysis was applied to report the results of the study.

The data saturation was identified when theme saturation was reached and no further data collection was needed. The data trustworthiness was achieved by member checking, data triangulation and debriefing. The researcher's reflexivity was showed in the data collection and analysis process. Data, codes and theme were analyzed by all research members from different backgrounds such as doctorate in public health/ medical anthropology (KM), family physician (NA) and pediatrician (RF, SE, MD, VK, NS, EF).

3. Results

The characteristics of the participants are described in Table 1. The majority of the participants are Moslem (24/31) with low income status (22/31). Participants' ethnic groups were originated from Palembang/South Sumatra (3), Bataknese/ North Sumatra (3), Riau (1), Padang/West Sumatra (2), Bangka/South Sumatra (1), Lampung/South Sumatra (2), 3 parents from Betawi, (3) 3 parents from Sundanese/West Java (3), Central Java (3), East Java (3), Madura (1), Bali (1), Sulawesi (1), East Nusa Tenggara (ENT) (3), and Papua (1).

The participants' distribution were P1 (from Sundanese), P2 (from Padang), P3 (from Madura), P4 (from Palembang), P5 (from Central Java), P6 (from Betawi), P7 (from Batak), P8 (from East Nusa Tenggara), P9 (from Bangka), A1 (from Betawi), A2 (from East Java), A3 (from Sulawesi), A4 (from Sundanese), A5 (from Palembang), A6 (from Padang), A7 (from Batak), A8 (from Central Java), A9 (from Lampung), A10 (from Papua), A11 (from East Nusa Tenggara), K1 (from Betawi), K2 (from Central Java), K3 (from Bali), K4 (from Padang), K5 (from Sundanese), K6 (from Riau), K7 (from East Nusa Tenggara), K8 (from Batak), K9 (from East Java), K10 (from Palembang), and K11 (from Lampung).

After the data were analyzed, five key categories in the cultural perceptions of child abuse among parents in Indonesia were identified: (1) definition of child abuse; (2) classification of child abuse; (3) the frequency of behavior described as child abuse; (4) level of child abuse (mild, moderate, and severe); and (5) the difference between violence and discipline.

3.1. Definition of child abuse

The perceptions of CA according to FGDs were activity causing injury to children and occurred because of parents' unstable emotion. This is reflected in the description two participants indicated,

Therefore, violence is ... parents' unstable emotion. (P9, male, Bangka)

Violence ... injuring ... children's physics and mental ... (A5, male, Palembang)

3.2. Classifications of child abuse (CA)

Based on the classification of CA, the study explored the perception of parents regarding the classification as described below.

3.2.1. Physical abuse

The study found that participants perceived physical abuse as beatings, including hitting, kicking, stepping on, punching, throwing things, and tweaking. A participant from Sumatra mentioned that swinging their children is accepted and means showing love and affection to correct their children's behavior.

... hitting, kicking, stepping on, and 'God forbid', hopefully keep away from punching, until bleed. (P3, male, Madura)

... if you just pinch it into physical violence, get beaten too... (A11, male, East Nusa Tenggara)

... tweaking ears if done too hard could also mean physical violence. (A4, female, Sundanese)

... those who came from Sumatra maybe able to accept, and have been a tradition... to raise a child... this means love (P9, male, Bangka)

3.2.2. Emotional abuse

Participants' perceptions regarding emotional abuse were including yelling, and scolding without any reasons. Making the children scared is inconsistent since some said this can be included as violence, but some did not feel that way. The cultures of Papua, Kupang, Betawi, Palembang agree that a loud voice is not a form of violence, but a habit and not intended to hurt.

... emotional abuse is when the violence occurs without a reason... (P1, male, Sundanese)

... including their mental abuse because we make them scared... (A3, male, Sulawesi)

Making the children scared, I think we do that as a reminder only... (P3, female, Madura)

... while being scolded is also actually a mental violence... (K5, female, Sundanese)

This is the characteristic of people who came from Medan, Papua, Kupang. Our high pitch voice doesn't mean emotional abuse, but if we do something with the physics, that is violence. (A10, male, Papua)

3.2.3. Sexual abuse

Participants perceived sexual abuse including touching sensitive areas such as private areas and having sexual contact. Sexual harassment can occur even if the child does not understand.

... sexual abuse means touching sensitive parts ...(A4, female, Sundanese)

... touching ... the private parts ... if boys experienced this, ... this could be described as sexual abuse. (P6, female, Betawi)

3.2.4. Neglecting

Regarding definition of neglect, participants described it will happen if parents could not afford what the children needs. However, if this is in accordance to the economic condition, it cannot be forced.

"It's the parents' obligation to fulfil what the children need... However, if we can't afford then we can't force ourselves, this way it's not violence..." (A9, female, Lampung)

3.2.5. Exploitation

Exploitation means forcing the children to work for economic needs, but asking/helping parents at home voluntarily for educating purpose so that the children can be independent, such as cleaning the house, washing the dishes, ironing or sweeping the floor are allowed, and these are the way parents teach children to be disciplined and these are not seen as violence or CA.

If we ask them to work outside ... this way, that's means we are abusing our children ... (A4, female, Betawi)

3.3. The frequency of behavior described as violence

It is important that parents understand and are aware of CA. This is often confusing if there is no clear

definition about it. There were several perceptions regarding the frequency described as violence. Parents did not describe them as violence if it only happened for 1-2 times whether the location is on the hand or foot. They also stated if it does not leave any marks, but it is done to remind only.

Yes, once is enough if the children didn't do anything wrong. If the children didn't listen probably could beat them twice.. However, beating doesn't mean until it left any marks, just only as reminder. If we can see the marks, this already can be described as violence.. (A9, female, Lampung)

3.4. Level of CA (mild, moderate, and severe)

Participants' opinion regarding the level of CA was described based on type of activities. The mild-moderate CA was described as pinching, tweaking, hitting the hand, foot parts, hitting with things for physical abuse and scolding, and bullying for emotional abuse. Touching sensitive parts and hugging are described as mild-moderate sexual abuse.

Severe physical abuse was described if the activity left wounds, needed to be hospitalized, and included having sex in sexual abuse. Severe emotional abuse was including shouting inappropriate words. The participants stated that high pitched voice was not violence, but is just done according to the cultures and the perceptions of each parents.

... pinching is still mild for me. (P9, male, Bangka)

... mild one ... from hand, ...(P4, male, Palembang)

The mild one is touching or "poking" ... this is already a violence if touching the unnatural area. (P6, male, Palembang)

... violence usually happens only to scold the kid ... moderate abuse usually happens by tweaking, pinching ... severe abuse means hitting with things or something that is leaving bruises..." (K1, female, Betawi)

The most severe abuse is related to "having sex" ... holding only is still mild ... hugging is moderate... (A8, female, Central Java)

... if they touch some part of the body and the owner doesn't allow this is already mild... touching private parts is moderate, and the severe one happens when impregnate and don't want to be responsible and killing the victim ... (A4, male, Sundanese)

... visum examination means severe abuse. (A11, male, East Nusa Tenggara)

... the severe one is when they shout inappropriate words ... ask once or twice and don't want to do something and the words come out... (A3, male, Sulawesi)

... in Sumatera ... Palembang people talk ... harshly, with high pitch ... just according to each person's perspectives. (A5, male, Palembang)

Betawi people character is mostly hard, that's why when calling the children, it's normal to shout, I know that... (A1, female, Betawi)

3.5. The difference between violence and discipline

Discipline and violence are very similar so that we found some overlap. According to participants' opinions about the difference between violence and discipline, there were two definitions. First, it is based on the location of the hitting that occurred. For example, if the location is on the head and face area, it can be included as violence.

Second, it depends on the objective. If it does not intend to violate, but to educate the children and build good character. Discipline is defined when the activity is performed out of love.

... hitting on the head and face are violence, but if performed on the hand foot or body... this is love... (P4, male, Palembang)

...hard to ask them to pray so that we could hit their soles of the feet and also tweaking their ears but not injuring... and beating their soles using stick.. (A4, female, Sundanese)

...pinching... sometimes hitting the thigh.. but the objective was not to maltreat the children, but only

to educate them so that they would be reticent and for character building. (P3, female, Madura)

4. Discussion

This study explored parents' perception on CA from different cultural background and generated five themes.

4.1. Definition of child abuse (CA)

A research in the United States of America regarding cultural adaptation to prevent CA found parents perceptions regarding how to educate and treat their children were varied according to the ethnic and demography, and the current adaptation and study were limited because of the specific adaptation to the local Latino community.³³ Culture in Indonesia can be described based on the participants' knowledge of violence. Indonesian people had been aware and understand the definition of CA.

According to the FGDs, all cultures agree that CA happens due to the parents' unstable emotion, injuring the children's physical and mental condition. These are corresponding with the commonly used CA definition which is all form of activity/treatment which hurt physically, psychically, sexually or by neglecting, causing or can lead to injury or real disadvantage towards the child's health, quality of life, growth and development, or self-esteem.^{3,34}

4.2. Classification of child abuse (CA)

Classification of CA consisted of physical abuse, emotional abuse, sexual abuse, neglecting, and exploitation.^{3,4,34,35} Child abuse classifications according the World Health Organization (WHO) consisted of physical abuse, emotional abuse, sexual abuse, and neglecting.^{36,37} Some studies described CA consisting of three types according to the results of the FGDs, which were physical, mental, and sexual abuse.³⁸

According to some of the other FGDs participants, classification CA was divided into two main types, which were physical abuse and non-physical abuse or some described as physical abuse and psychological/mental abuse. Cultures in Indonesia were not aware of child neglect and exploitation. In some parts of the

world, tradition and culture norms usually contribute in various aspects of violence, which are sometimes still considered as acceptable, although they are unreasonable and dangerous.

4.2.1. Physical abuse

Physical abuse consisted of hitting, kicking, pushing, suffocating, scraping, throwing, pulling hair, poisoning, swaying, swinging, pouring hot water, and throwing things. While the participants' opinions regarding the physical abuse were physical abuse was when using hands, including hitting, kicking, stepping on, punching, throwing things, and tweaking. The terminologies of using hands were quite wide, while Indonesian cultures are generally aware of physical abuse.

Previous research regarding "ngayun budak" in Indonesian cultures in Cicinde village, Karawang, West Java. This tradition was a ritual which performed when the baby was 7 days after been born, and this practice is dangerous since it is a risk factor of hypoxic ischemic encephalopathy (JIE).²³ Shaking is a prevalent form of abuse seen in the majority of cases who are less than 9 months old. Most perpetrators of such abuse are male, and tend to apply greater force to shake children.

Intracranial hemorrhages, retinal hemorrhages and small fractures at the major joints of the child's extremities can result from very rapid shaking of an infant. They can also follow from a combination of shaking and the head hitting a surface.¹⁸ According to the results from the FGDs, Sumatera people mentioned that the tradition to swing the children is allowed to be done, because this is seen as a sign of love.

4.2.2. Emotional abuse

Participants' opinions regarding emotional abuse included shouting and scolding without any cause. If parents make the children scared, some agreed to describe this as violence, while some did not. Emotional abuse can include blaming, belittling, degrading, intimidating, terrorizing, isolating, or otherwise behaving in a manner that is harmful, which can potentially damage the child psychologically or emotionally, by threatening, insulting, ridiculing, and confining.^{36,37} The results of the FGDs indicate that

the participants do not widely know what is included in emotional abuse.

4.2.3. Sexual abuse

Participants' opinions regarding sexual abuse was including holding sensitive parts, such as touching private parts and having sex. Sexual abuse consists of penetration: in mouth, penis, vulva, or anus of the child and another individual and sexual contact: intentional touching directly or through clothing of genitalia, buttocks, or breasts (excluding contact required for normal care).^{36,37} In principle, all FGDs participants know the type of sexual abuse.

4.2.4. Neglect

Various cultures in Indonesia are not familiar with neglect as one of the CA classifications, but they were able to explain the examples. Participants' opinions regarding the examples of neglect included if parents could not fulfil their children's needs, in accordance to economic conditions and could not be forced. Neglect includes failure to provide adequate food, clothing, or accommodation; not seeking medical attention when needed; allowing a child to miss large amounts of school; and failure to protect a child from violence in the home or neighborhood or from avoidable hazards.^{36,37}

4.2.5. Exploitation

Exploitation of a child refers to use of the child in work or other activities for the benefit of others, which includes for child labor and child prostitution. These activities are to the detriment of the child's physical, mental health, education, or spiritual, moral, social, and emotional development.^{4,35} Participants' opinions about exploitation included asking the children to work to meet the economic needs whatever it is, but asking/helping parents at home voluntarily to educate children to be independent, such as cleaning the house, washing dishes, ironing or sweeping could be done, because this way parents could teach discipline.

4.3. The frequency of behavior described as violence

Tools to screen child abuse, such as the ICAST-for Children (ICAST-C), did not provide the frequency

of this kind of behavior enough to be described as violence (influenced by Indonesia's huge diversity).³ Participants' opinions regarding the frequency of this kind of behavior until it can be described as violence included if the violence was only performed 12 times on the hand or foot, not leaving marks and the objective was to remind not for maltreatment, and if more than that then it can be described as violence.

4.4. Level of CA (mild, moderate, and severe)

Overall, 33.3% Asian-American parents educate their children by doing mild violence, and only 2.2% reported severe violence.^{20,25} Tools to screen child abuse, such as the ICAST-for Children (ICAST-C), have not provided the level of severe to mild violence (which also influenced by Indonesia's huge diversity).³² Participants' opinions regarding the level of violence which can be categorized as mild, moderate, and severe, indicated that these terminologies were including mild-moderate such as physical abuse: pinching, tweaking, hitting the hand, foot parts, and hitting with things, in emotional abuse: scolding, and bullying, while sexual abuse: touching sensitive parts and hugging.

Severe abuse happens if leaving wounds, needed to be hospitalized, and examined, including having sex in sexual abuse. Severe emotional abuse was including shouting inappropriate words. Participants who came from Palembang, Batak, Betawi, East Nusa Tenggara explained that a high-pitched voice is not violence, because it depends on each culture and their perception.

4.5. The difference between violence and discipline

Discipline and violence are very similar so that we found some overlap. However, there were several differences between the two. Positive discipline strategies in children were done to improve self-esteem, improve the ability to behave correctly, and develop a positive relationship. Punishments with physical abuse and/or emotional abuse were usually reflecting anger or despair and not as a good strategy to educate children to have a good behavior.²⁶

Children's education in every culture on earth which has even one kind of child abuse should be

analyzed directly if this leads to physical or emotional harm or disadvantage, and the cultural practices should be re-evaluated if found irrelevant.²² The culture of NTT and Madura still use the practice of pinching and confining as an act of discipline. The limits of violence and discipline must be clear.

According to participants' opinion about the difference between violence and discipline, it was based on the location on which the hitting happened, so if the parent hit the head and face area this can be included as violence. The difference between violence and discipline are depending on the objective, not to violate, but to create a better future, and educate the children so that they can be obedient and reticent and for character building. Discipline is when the potentially abusive activity is performed 'out of love'.

4.6. Practice implication

The standard of parenting practice is still a dilemma, but the authorities should analyze any practice if it leads to emotional and/or physical harm or disadvantage in children which then should be punished by law.²² Other study results regarding the cultural tradition showed that sexual abuse in children and women faced trouble in finding help. Community campaigns, entertainment programs, education, and mass media play a huge role in preventing CA and women abuse.³⁹ The effort to prevent CA has been announced universally and is considered as an important human right.

The effort of CA prevention was performed in family approach, healthcare approach, treatment approach, law and constitution and related programs, efforts in the community, and social approaches including intervention programs and international agreements.^{3,18,40} Participants' opinions regarding the expectation and management against CA was so that it does not happen again. The management efforts including prevention were related to the family approach from religion because no religion supports violence, community-based efforts were related to several strategies to prevent violence against children including providing educational television program, and then the social approach by improving the people and government's awareness.

There must be cooperation and communication between the community and the government, with responsive efforts to report to the neighborhood watch, neighborhood chief, village officials, police and to inform of incidents of CA.

4.7. Limitations of study

The study was conducted in one city of Indonesia. To have broader cultural perceptions, further study is needed to completely determine the perceptions of CA from all 38 current provinces in Indonesia. Research should measure the cost aspects and reachability of the region. Based on the results, CA prevention efforts need more attention from family, community and government members such as the Commission for the Protection of Women and Children (KPPA), social services, public health officers, and police to participate in managing and preventing CA.

5. Conclusions

From a variety of cultural perceptions, child abuse occurred because of the parents' unstable emotion and was described as causing injury to the children's physical and mental conditions. Mild-moderate child abuse occurred if it happened only 1–2 times, on the hand or foot part, did not leave marks, and was done with the intention to remind the children to be obedient and build character. Severe child abuse occurs when it results in bruises and requires hospitalization. The differences between abuse and discipline are depending on the intention and the cultural norms. Discipline is intended not to maltreat but for the children's behavior and to educate the children. Cultural diversity in Indonesia in principle reflects the knowledge and understanding about CA, which were related to the family approach from religion, communication and cooperation between communities and the government.

Acknowledgment

The authors would like to thank the head and staff of Health Department at Municipality of Bandung, head and staff of Soreang Primary Health Care Municipality of Bandung, all staff village office Pamekaran, Soreang Sub-District, Bandung District for providing

the meeting place, and we also thank everyone who participated in the focus group discussions.

Conflict of interests

The authors declare that they have no competing interests.

References

1. Louwers ECFM, Affourtit MJ, Moll HA, Koning HJ, Korfage IJ. Screening for child abuse at emergency departments: a systematic review. *Arch Dis Child*. 2010;95:214–8. doi:10.1136/adc.2008.151654.
2. Soetjiningsih, Ranuh IGND. *Tumbuh kembang anak*. 2 ed. Jakarta: EGC; 2013:558–71.
3. Peraturan menteri kesehatan Republik Indonesia nomor 68 tahun 2013 tentang kewajiban pemberi layanan kesehatan untuk memberikan informasi atas adanya dugaan kekerasan terhadap anak;2013.
4. Kementerian Kesehatan Republik Indonesia. *Pedoman rujukan kasus kekerasan terhadap anak bagi petugas kesehatan*. Jakarta: United Nations Children's Fund; 2007:15–20.
5. U.S. Department of Health & Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau. *Child Maltreatment:2019*; Available from: <https://www.acf.hhs.gov/cb/report/child-maltreatment-2019>
6. UNICEF: *Violence against children in East Asia and the Pacific: a regional review and synthesis of findings*. Bangkok: United Nations Children's Fund; 2014:1–20.
7. Stoltenborgh M, Bakermans MJ, Kranenburg, Alink LRA, Van MH, IJzendoorn. The prevalence of child maltreatment across the globe: review of a series of meta-analyses. *Child Abuse Rev*. 2015;24:37–50.doi:10.1002/car.2353.
8. Setyawan D. *Pelaku kekerasan terhadap anak tiap tahun meningkat*. Jakarta: Komisi Perlindungan Anak Indonesia (KPAI); 2015; Available from: <http://www.kpai.go.id/berita/kpai-pelaku-kekerasan-terhadap-anak-tiap-tahun-meningkat/>.
9. Pemerintah Provinsi Jawa Barat. *Kekerasan terhadap anak naik signifikan*. 2017; Available

- from: <http://jabarprov.go.id/index.php/news/15766/2016/01/23/Kekerasan-Terhadap-Anak-Naik-Signifikan>.
10. Pemerintah Provinsi Jawa Barat. Netty tegaskan, Jabar miliki program Jabar tolak kekerasan. 2017; Available from: <https://jabarprov.go.id/index.php/news/22465/2017/04/12/Netty-Tegaskan-Jabar-Miliki-Program-Jabar-Tolak-Kekerasan>.
 11. Komisi Perlindungan Anak Indonesia (KPAI). Kasus perlindungan anak berdasarkan data KPAI pada lokasi pengaduan dan pemantauan media se-indonesia tahun 2011-2016. Jakarta:2017; Available from: <http://bankdata.kpai.go.id/tabulasi-data/data-kasus-se-indonesia/data-kasus-perlindungan-anak-berdasarkan-lokasi-pengaduan-dan-pemantauan-media-se-indonesia-tahun-2011-2016#bandung>.
 12. Raman S, Hodes D. Cultural issues in child maltreatment. *J Paed Child Health*. 2012;48:30–7. doi: 10.1111/j.1440-1754.2011.02184.x.
 13. Elliott K, Urquiza A. Ethnicity, culture, and child maltreatment. *J Soc Issues* 2006;62(4):787–809. doi: 10.1111/j.1540-4560.2006.00487.x.
 14. Koentjaraningrat. Pengantar ilmu antropologi. Jakarta: PT. Rineka Cipta; 2009:146–320.
 15. WHO: Violence prevention the evidence. Changing cultural and social norms that support violence. Geneva: World Health Organization; 2009:1–12.
 16. Lansford JE, Godwin J, Tirado LMU, Zelli A, Al-Hassan SM, Bacchini D, et al. Individual, family, and culture level contributions to child physical abuse and neglect: a longitudinal study in nine countries. *Dev Psychopathol*. 2015;27(4):1417–28. doi: 10.1017/S095457941500084X.
 17. Setiawan E. Kamus Besar Bahasa Indonesia (KBBI). Badan Pengembangan dan Pembinaan Bahasa, Kementerian Pendidikan dan Kebudayaan (Pusat Bahasa); 2017; Available from: <https://kbbi.web.id/budaya>.
 18. Hidayat AA, Atoilah EM, Kusnadi E. Ilmu sosial dan budaya dasar untuk kesehatan. Bandung: Penerbit Nuansa Cendikia; 2015:79–90.
 19. Krug EG, Dahlberg LL, Mercy LA, Zwi AB, Lozano R. World report on violence and health Geneva: World Health Organization; 2002:57–81.
 20. Ridwan I, Widiastuti A, Utami AM, Wulandari RA, Anggraeni S. Projection of children salvation in ngayun budak tradition in Cicinde Village, Karawang, West Java, Indonesia. *Int J Soc Sci*. 2015;2(1):265–82. doi: <http://dx.doi.org/10.20319/pijss.2016.s21.265282>
 21. Youngblade LM. Peer and teacher ratings of third- and fourth-grade children's social behavior as a function of early maternal employment. *J Child Psychol Psychiatry*. 2003;44(4):477–488.
 22. Rumble L, Febrianto RF, Larasati MN, Hamilton C, Mathews B, MP D. Childhood sexual violence in Indonesia: a systematic review. *Trauma, Violence, & Abuse*. 2018;20(10):1–16. doi: 10.1177/1524838018767932.
 23. Futterman M. Seeking a standard: reconciling child abuse and condoned child rearing practices among different cultures. Source: The University of Miami Inter-American Law Rev. 2003;34(3):491–514. Available from: <http://www.jstor.org/stable/40176547>.
 24. Sumargi A, Sofronoff K, Morawska A. Parenting practices and parenting programs in Indonesia: a literature review and current evidence. *Anima, Indonesian Psychol J*. 2014;29(4):186–98. Available from: www.anima.ubaya.ac.id/class/openpdf
 25. Lau AS, Takeuchi DT, Alegri M. Parent-to-child aggression among Asian American parents: culture, context, and vulnerability. *J Marriage and Fam*. 2006;68:1621–75. Available from: <https://laulab.psych.ucla.edu/psych-laulab/wp>
 26. Zhai F, Gao Q. Child maltreatment among Asian Americans characteristics and explanatory framework. *Child Maltreatment*. 2009;14(2):207–24. doi: 10.1177/1077559508326286.
 27. Butchart A, Harvey AP. Preventing child maltreatment: a guide to taking action and generating evidence. Geneva: World Health Organization; 2006:7–16.
 28. Zolotor AJ, Runyan DK, Dunne MP, Jain D, Peters HR, Ramirez C, et al. ISPCAN Child Abuse Screening Tool Children's Version (ICAST-C): instrument development and multi-national pilot testing. *Child Abuse & Neglect*. 2009;33:833–41. doi: 10.1016/j.chiabu.2009.09.004.
 29. Al-Eissa M, AlBuhairan F, Qayad M, Saleheen

- H, Runyan D, Almuneef M. Determining child maltreatment incidence in Saudi Arabia using the ICAST-CH: a pilot study. *Child Abuse & Neglect*. 2015;45:174–82. doi: <http://dx.doi.org/10.1016/j.chiabu.2014.08.016>
30. Creswell JW. *Qualitatif inquiry and research design: choosing among five approaches*. 2 ed. California: Sage Publications; 2007:147–173.
31. Wong L P. Focus group discussion: a tool for health and medical research. *Singapore Med J* 2008;49(3):256. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/18363011>
32. Bengtsson M. How to plan and perform a qualitative study using content analysis. *Nursing Plus Open* 2. 2016:8–14. doi: <http://dx.doi.org/10.1016/j.npls.2016.01.001>
33. Dhamayanti M, Rachmawati AD, Arisanti N, Setiawati EP, Rusmil VK, Sekarwana N. Validitas dan reliabilitas kuesioner skrining kekerasan terhadap anak "ICAST-C" versi bahasa Indonesia. *JKP*. 2017;5(3). Available from: <https://jpk.fkep.unpad.ac.id/index.php/jpk/article/view/650>
34. Beasley LO, Silovsky JF, Owora A, Burris L, Hecht D, Huffine PD, et al. Mixed-methods feasibility study on the cultural adaptation of a child abuse prevention model. *Child Abuse & Neglect*. 2014;xxx:1–12. doi: <http://dx.doi.org/10.1016/j.chiabu.2014.04.017>
35. Bailhache M, Leroy V, Pillet P, Salmi LR. Is early detection of abused children possible? a systematic review of the diagnostic accuracy of the identification of abused children. *BMC Pediatrics*. 2013;13:202. Available from: <http://www.biomedcentral.com/1471-2431/13/202>
36. Beuze JN. Child protection monitoring and evaluation Reference Group, Measuring Violence against Children: Inventory and assessment of quantitative studies. New York, 2014. New York: Division of Data, Research and Policy, UNICEF; 2014:18–21.
37. WHO. Child Maltreatment. World Health Organization; 2017; Available from: www.communicatehealth.com.
38. Gilbert R, Widom CS, Browne K, Fergusson D, Webb E, Janson S I. Burden and consequences of child maltreatment in high-income countries. *Lancet*. 2009;373:68–81. doi: 10.1016/S0140-6736(08)61706-7
39. Hodgdon HB, Spinazzolac J, Briggs EC, Liang L, Steinberg AM, Layneg CM. Maltreatment type, exposure characteristics, and mental health outcomes among clinic referred trauma-exposed youth. *Child Abuse & Neglect*. 2018;82:12–22. doi: <https://doi.org/10.1016/j.chiabu.2018.05.021>
40. Abeid M, Muganyizi P, Olsson P, Darj E, Axemo P. Community perceptions of rape and child sexual abuse: a qualitative study in rural Tanzania. *BMC Int Health and Human Rights*. 2014;14:23. Available from: <http://www.biomedcentral.com/1472-698X/14/23>.

Appendix. Example of the analytical process in an excerpt of an interview text.

| Meaning Unit | Condensed MU | Codes | Sub-categories | Category |
|--|--|-------------------------|--|----------------------------------|
| Yes, if you say violence, it's already violent but not everything becomes violent if it's my view, it's from the emotions of the parents. If parents are emotionally high, it must be violence or in my opinion. If it was hit, all the blows had become violent | Therefore, violence is..parents' unstable emotion | Parents emotional | Parents become emotional | Definition of Child Abuse |
| Violence in my opinion or words that cause both physical and mental in children that cause children to "get hurt" or "offended" both feelings and physical. | Violence..'injuring' ..children's physics and mentally.. | Physically and mentally | Make an effort to hurt physically and mentally | |

Reducing symptoms severity in patients with COVID-19 and post COVID-19 patients using the Sujok and Trorigin Therapy (STT) through community empowerment

Ade Sutrimo,^{1*} Intansari Nurjannah,¹ Deddy Nur Wachid Achadiono,² Janatin Hastuti,³ Azam David Saifullah,¹ Ina Laela Abdillah,⁴ Rafialdo Arifian,⁵ Nabila Putri Irenda,⁶ Ajeng Wita Astri Devica Puri,⁶ Wulan Fitrianingrum,⁶ Pius Bonaventura Ado,⁶ and Indah Fajar Destantika⁶

¹Department of Mental Health and Community Nursing, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

²Department of Internal Medicine, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

³Department of Health Nutrition, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

⁴Banguntapan Public Health Center Unit II, Yogyakarta, Indonesia

⁵School of Medicine, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

⁶School of Nursing, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

SUBMITTED: 31 August 2022 REVISED: 01 November 2022 ACCEPTED: 09 November 2022

KEYWORDS

Community empowerment
COVID-19
Sujok Therapy
Trorigin Therapy
Symptom severity

ABSTRACT This study aims to determine the result of the Sujok and Trorigin Therapy (STT) for reducing symptoms experienced by COVID-19 and post-COVID-19 patients through community empowerment. This study used a pre-experimental design without a control group. STT was provided by volunteers who had been specially trained. STT utilizes a specific therapeutic protocol such as massage, twist, needle or color therapy on the palm and back of the hands, targeting the symptoms experienced by respondents. Respondents were measured on a symptom severity scale (Likert scale: 1-5) before and after therapy. There were 7 respondents who were diagnosed positive for COVID-19 and 32 were post-COVID-19, with 16 men and 23 women ranging from 18 to 70 years old with most at the 41-50 years age group. The symptoms experienced by respondents with COVID-19 and post-COVID-19 were mostly similar such as dyspnea and coughing. The average score of symptoms severity was reduced from 3.26 to 1.74. In conclusion, the results show that the STT provides effective therapeutic results for reducing symptoms in COVID-19 patients and post-COVID-19 patients through the community empowerment.

© The Journal 2022. This article is distributed under a [Creative Commons Attribution-ShareAlike 4.0 International license](https://creativecommons.org/licenses/by-sa/4.0/).

1. Introduction

The Corona Virus Disease 2019 (COVID-19) infection leads to a variety of symptoms which are unique to each patient. Due to the wide variety of symptoms, each patient may require a different type of therapy based on the severity of their symptoms. A variety of therapies can be used to treat the symptoms, including conventional and alternative therapies. Complementary therapy is alternative therapy

administered alongside conventional therapy. Currently, there are various kinds of complementary alternative therapy (CAT) to treat the patients with COVID-19 and post COVID-19 patients.¹

Various complementary therapies include aromatherapy, acupuncture, herbal medicine, massage therapy, visualization and yoga. One of them is a safer, cheaper, and safer way, namely by using telehealth through self-therapy guidance using STT as an alternative therapy for positive individuals and self-isolation at home.²

Based on different references, complementary practices are divided into three major groups: natural products, mind and body practices, and other

*Correspondence: adesutrimo@ugm.ac.id

Department of Mental Health and Community Nursing, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Jl. Farmako, Sekip Utara, Yogyakarta 55281, Indonesia.

complementary approaches (Traditional Chinese Medicine, Western herbal medicine, homeopathy, naturopathy, Ayurvedic medicine), and conventional medicine practices. Based on the classification of the World Health Organization (WHO), CAT is divided into five main categories, namely: Mind-body therapies; Biologically Based Therapies; Manipulative and Body-Based Therapies; Energy Therapies; and Systems of Care.³ In Indonesia, the types of complementary therapies found are as follows: acupressure, acupuncture, aromatherapy, biofeedback, dietary supplements, energy therapy, herbal therapy, hypnotherapy, massage therapy, meditation, music therapy, spiritual and religious therapy.⁴

One therapy that is being developed in Indonesia is Sujok and Triorigin Therapy. According to the origin of the term which is Korean, Su means hand and Jok means foot, which is said to be a control panel over a person's health. STT was invented by Prof. Park Jae Woo, a philosopher from South Korea in 1987, who developed a treatment system that manipulates the areas of the hands and feet either by massage, applying color, attaching magnets, seeds, or using needles such as acupuncture, this is because the hands and feet are similar in a body structure. STT became one of the alternative treatments chosen by researchers because it has a significant effect in a relatively short time. Sujok has many methods of therapy and can be referred to as Sujok correspondent treatment, Sujok Six Ki (Six energy), and Triorigin Therapy.⁵

Due COVID-19 various symptoms severity, STT can be used to treat targeted complaints, discomfort, as well as to improve the function of organs and a whole body. Several studies related to the use of Sujok include a decrease in fatigue and weakness in patients with cancer,⁶ a decrease in symptoms in the elbow hygroma,⁷ migraine,⁸ asthma,⁹ rehabilitation in stroke patients,¹⁰ and managing symptoms due to heel spur.¹¹ In addition, Sujok was also statistically able to reduce pain levels relatively quickly¹² and showed an improvement in patients with chest pain problems.¹³ STT also showed a significant result related to COVID-19 problems such as fear for psychological responses as well as the physical complaints.^{2,14}

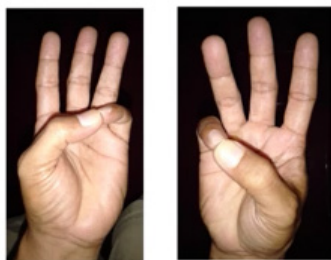
In relation to the implementation of this community service program, the location used for the activity includes the area of community empowerment of Faculty of Medicine, Public Health and Nursing Universitas Gadjah Mada, namely the Banguntapan II Health Center, Bantul. Symptoms of COVID-19 patients and post COVID-19 still exist although the conventional medications have been prescribed. Based on this situation, the complementary therapy may be an alternative to reduce the symptom severity of COVID-19. STT is expected to be a complementary therapy to reduce the symptom severity through community empowerment. This study aimed to determine the result of the STT for reducing symptoms experienced by COVID-19 and post-COVID-19 patients.

2. Methods

This study used a pre-experimental research design in the intervention group without a control group. The ethical approval was received from Medical and Health Research Ethics Committee (MHREC) of the Faculty of Medicine, Public Health and Nursing Universitas Gadjah Mada – Dr. Sardjito General Hospital with the number KE/FK/1003/EC/2021. The population in this study was the entire community that can be reached by trained volunteers. Activities from this community service consist of recruitment to become volunteers and training for about 30 hours to be able to apply STT.

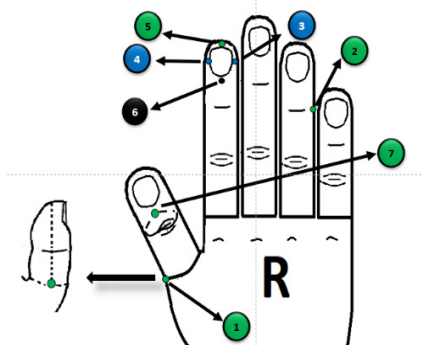
After that, the volunteers work together with Public Health Center health workers to get access and to communicate via telehealth with individuals exposed to COVID-19. The volunteers who were trained came from various provinces throughout Indonesia. As many as 37 volunteers were given training for 30 hours which was divided into several weeks through the virtual meetings (Zoom Clouds Meetings platform). The volunteers were also given a post and pre-test of their ability to perform therapy, and all volunteers who had passed the post-test were able to manage patients.

The therapy protocols were given based on the condition of the respondents and volunteers can apply therapy using telehealth. The delivery of protocols from the volunteers to respondents



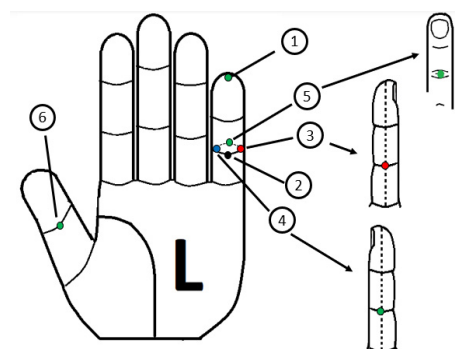
1. Place the finger according to the picture
2. Find the most convenient position (choose freely)
3. Position the hand at the most convenient position (upward, backward or side position)
4. Close the eyes or not (preference for the most convenience)
5. Loose yourself, enjoy, relax, and smile
6. You can pray or meditate as you wish
7. Do it for 10 to 15 minutes or more as needed

Figure 1. Therapy for energy harmonization.²



Put the dot color as can be seen in the picture by following the number sequence from 1 to 7

Figure 2. Therapy to reduce the power of virus.²



Put the dot color as can be seen in the picture by following the number of sequences from 1 to 7

Figure 3. Therapy to improve immunity system.²

Table 1. Characteristics of the respondents.

| Patient | COVID-19 | Post COVID-19 |
|-------------|----------|---------------|
| Sex | | |
| Male | 5 | 11 |
| Female | 2 | 21 |
| Age (years) | | |
| 15-20 | - | 3 |
| 21-30 | - | 3 |
| 31-40 | 2 | 4 |
| 41-50 | 4 | 15 |
| 51-60 | 1 | 5 |
| 61-70 | - | 2 |

are two-way communication using WhatsApp chat features (text, image, audio, and video) depending on the most convenience method they agreed. If the respondent wishes to meet in person, the volunteer will also help overcome his physical complaints by using STT with appropriate safety measures of the COVID-19 health protocols.

For each respondent, volunteers measured the severity of symptoms before and after therapy which consists of a Likert scale of 1-5. Scale 1 means no symptoms, scale 2 means mild symptoms, scale 3 means moderate symptoms, scale 4 means symptoms are severe, and scale 5 means symptoms are very severe. After volunteers assessed respondents' complaints, the STT protocols were formulated on their hands.

Interventions carried out by volunteers are based on the teaching that has been given during the training, and if the volunteers have difficulty in handling the respondents, the volunteers can consult with the researchers who will provide instructions regarding the appropriate intervention for the respondent. The analysis was conducted using a paired t-test to determine whether there was a significant difference in the scale before and after the intervention. Since options for the protocol therapy are various and cannot be put all in this article, here the authors show some of the examples of the therapy which are: (a) Therapy for energy harmonization; (b) Therapy to reduce the power of virus; and (c) Therapy to improve the immunity system which are presented in Figures 1 to 3. These figures are used with permission from the author.²

3. Results

Table 1 represents the characteristics of the patients. A total of 39 patient with COVID-19 and post COVID-19 patients were treated with STT in this community empowerment activity. Most patients are female and aged from 41 to 50 years old. Medications for respondents are still prescribed by health professionals based on their symptoms. The respondents complaints and the types of therapy are presented on Tables 2. Patients with COVID-19 who were mostly with mild symptoms before the therapy changed to slight symptoms and no symptoms. Meanwhile, prior to the therapy, the post COVID-19 patients varied from mild to very severe symptoms. After the therapy, the symptoms were reduced to mild until no symptoms. The detailed symptoms' severity pre and post STT are presented in the Table 3. The normality data were performed and showed that skewness as well as kurtosis are in normal range and indicating the data were normally distributed and were treated as continuous data. Based on this, the statistical analysis showed that there was a significant difference between the severity scores of symptoms before and after therapy. The result is presented in the following Table 4.

4. Discussion

In general, the symptoms experienced in post-COVID-19 patients are more varied and more numerous than in patients with COVID-19. This is in accordance with the results of previous studies where the sequelae of post-COVID-19 patients are also still present with conditions during COVID-19, namely persistent cough and breathing difficulty. In addition, post-COVID-19 symptoms are indeed more varied as in the findings of other studies, namely neurocognitive post COVID-19 (brain fog, dizziness, loss of attention, confusion), autonomic post-COVID-19 (chest pain, tachycardia, palpitations), gastrointestinal post-COVID-19 (diarrhoea, abdominal pain, vomiting), post-COVID-19 respiratory (general fatigue, dyspnea, cough, throat pain), post-COVID-19 musculoskeletal (myalgias, arthralgias), psychological-related post-COVID-10 (posttraumatic stress disorder, anxiety, depression, insomnia), and other manifestations (ageusia, anosmia, parosmia, skin rashes).¹⁵

One of the literature reviews also found that as many as 20.7% of reports on long-term COVID-19 symptoms were in abnormal lung function, 24.14% in neurological complaints and olfactory dysfunction and 55.17% concerning other symptoms, mainly chronic fatigue and pain. Due to the long-term post-COVID-19 symptoms, there have been various management methods for post-COVID-19 both in conventional medicine and CAT medicine.¹⁶ Currently, there have been publications where post-COVID symptoms management guidelines have been compiled for primary care providers (PCP) which include management for respiratory, cognitive and neurological symptoms, chronic fatigue, dysautonomia and anosmia.¹⁷

The CAT options for COVID-19 and post-COVID-19 includes homeopathy which targets physical and mental problems,¹⁷ yoga and stress management and lifestyle,¹⁸ ayurveda,¹⁹ herbal medicine,^{20,21} green tea,²² flavonoid,²³ meditation,²⁴ mindfulness,²⁵ acupressure and Liu Zi Jue Qigong,²⁶ acupuncture,²⁷ cognitive-spiritual hope and Taichi,²⁸ reflexology,²⁹ relaxation,³⁰ psychoeducation and mind-body complementary therapy³¹ and Qingshu Yiqi decoction.³² Although those complementary and alternative therapies mentioned above are promising the success to reduce the symptoms of COVID-19 as well as post COVID-19, varied mechanisms and targeted symptoms are specific considerations to choose STT in this community empowerment with its simplicity, self-guide protocols and flexibility to implement for the patients.

STT which is the method used in this study has developed over time, starting with Sujok correspondent which focuses on the similarity between body parts and human hands.⁵ Sujok is done on the hands and feet and can use various methods including massage, seeds, magnets, needles, twists and needles. Science related to Sujok is also developing and the therapy not only is aimed at the physical but also at human energy namely the existence of six ki or six energies which can be one of the methods for therapy.³³

The scientific development of Sujok which combines physical and energy-aimed therapy is with the concept of Triorigin. The Triorigin concept

Table 2. Complaints and the type of therapy for post COVID-19 patients.

| Respondent Code | Complaints | Post COVID-19 patients | |
|-----------------|---|---|--|
| | | Right-hand therapy | Left-hand therapy |
| 1 | Heavy breathing | Therapy for respiratory system harmonization | Therapy for respiratory system harmonization |
| 2 | Short of breath, feel weak when walking | Therapy for Dyspnea | Therapy for Dyspnea |
| 3 | Gas in stomach and pain mostly in the morning | Mudra on Index Finger (He-F) | Mudra on Joint number 11 (middle joint of little finger) |
| 4 | Excess sputum and sometimes coughing | Mudra on Joint number 5 (lower joint of ring finger) | Therapy for respiratory system harmonization |
| 5 | Gas in stomach | Therapy for harmonization in digestive system | Therapy for improving immunity system |
| 6 | Easy to forget something, easy to feel exhausted | Therapy for energy harmonization | Therapy to improve memory |
| 7 | Fever, fatigue | Therapy for energy harmonization and Energy point therapy | Therapy for improving immunity system |
| 8 | Dyspnea, pain in epigastrium, fatigue | Therapy for energy harmonization | Therapy for improving immunity system |
| 9 | Stomach gases | Therapy for harmonization in digestive system | Therapy for improving immunity system |
| 10 | Easy to forget something | Therapy for energy harmonization | Therapy to improve memory |
| 11 | Easy to forget something | Therapy for energy harmonization | Therapy for improving immunity system |
| 12 | Fatigue, cough | Therapy to reduce the power of virus | Energy point of therapy |
| 13 | Gas in stomach | Therapy for harmonization in digestive system | Therapy for improving immunity system |
| 14 | Easy to forget something | Therapy for energy harmonization | Therapy to improve memory |
| 15 | Cold and dust allergy, excess sputum white and bubbling | Mudra on little finger | Mudra on little finger |
| 16 | Dizziness, anosmia | Therapy to reduce the power of virus | Physical (area specific) therapy |
| 17 | Coughing | Therapy to reduce the power of virus | Therapy for coughing |
| 18 | Coughing | Therapy to reduce the power of virus | Therapy for coughing |
| 19 | Coughing | Therapy for coughing | - |
| 20 | Easy to forget something | Therapy for energy harmonization | Therapy for improving immunity system |
| 21 | Easy to cough, easy to feel exhausted | Therapy for respiratory system harmonization | Therapy for improving immunity system |
| 22 | Palpitation and fever after vaccination | Therapy for energy harmonization | Therapy for improving immunity system |
| 23 | Fatigue, dyspnea and anxious | Therapy for respiratory system harmonization | Energy point of therapy |
| 24 | Coughing with about 1/2 hours duration | Therapy for coughing | Therapy for coughing |
| 25 | Chest pressure, dyspnea, hard to walk long distance | Therapy for energy harmonization | Therapy for Dyspnea |
| 26 | Dyspnea, coughing | Therapy for Dyspnea | Therapy for Dyspnea |
| 27 | Dyspnea, coughing, anosmia | Therapy for Dyspnea | Therapy for Dyspnea |
| 28 | Dyspnea, coughing | Therapy for Dyspnea | Therapy for Dyspnea |
| 29 | Dyspnea, coughing, anosmia | Therapy for Dyspnea | Therapy for Dyspnea |
| 30 | Pain in finger | Color therapy Triorigin | Colour Therapy |
| 31 | Pain when walking | Mudra by using thumb | Mudra by using thumb |

Table 2. (continued).

| | | | |
|----|---|--|--|
| 32 | Fever after vaccination and pain in injection area | Meridian for small intestine (J-10), Colour therapy | Meridian for small intestine (J-10), Colour therapy |
| 32 | Coughing with sputum, easy to be exhausted and sometimes chest pain | Mudra on Joint number 14 (upper joint of index finger) | Mudra on Joint number 5 (lower joint of ring finger) |
| 34 | Coughing with sputum | Therapy for coughing | Therapy for energy harmonization |
| 35 | Easily to feel exhausted, dyspnea and fatigue | Therapy for energy harmonization | - |
| 36 | Dyspnea | Therapy for respiratory system harmonization | - |
| 37 | Weak | Therapy for energy harmonization | Therapy for improving immunity system |
| 38 | Dyspnea | Therapy for respiratory system harmonization | Therapy for improving immunity system |
| 39 | No appetite | Therapy for energy harmonization | Energy point of therapy |

Table 3. Complaints and the type of therapy for post COVID-19 patients.

| Score ^a | Respondents (n=39) | | | |
|--------------------|--------------------|-------|--------------|-------|
| | Pre therapy | | Post therapy | |
| | f | % | f | % |
| 1 | | | 14 | 43.58 |
| 2 | 7 | 17.94 | 21 | 53.84 |
| 3 | 21 | 53.84 | 4 | 10.25 |
| 4 | 5 | 12.82 | | |
| 5 | 6 | 15.38 | | |

^aScore 1 = No symptoms; Score 2 = Slight symptoms; Score 3 = Mild symptoms; Score 4 = Severe symptoms; Score 5 = Very severe symptoms.

Table 4. Statistical test for pre-post therapy.

| Variables | Symptom severity | | | | |
|--------------------|------------------|------|---------|----|----------------------|
| | Mean | SD | t table | df | p value ^a |
| Pre-therapy score | 3.26 | 0.15 | 9.480 | 28 | <0.001 |
| Post-therapy score | 1.74 | 0.1 | | | |

^aPaired t-test

was part of the invention of Prof. Park Jae Woo before he passed away and is a complete and comprehensive concept that covers not only the body, but also the mind, life and soul.³³ Basically, all what exists in the universe, whether in the form of physical or non-physical things, can be categorized in a Triorigin model consisting of 4 energies, namely Neuto, Hetero, Homo, and Neutro. Each energy has its own characteristics and includes human beings consisting of 4 components, namely Soul (Neuto), Mind (Hetero), Body (homo) and Life (Neutro). This classification continues and in the end all parts of the body can be classified and then can be categorized on certain models of Triorigin, for example, Triorigin Model for the respiratory system, digestive system

and others. It also includes a Triorigin model for living things such as virus, bacteria, fungus and parasite.³⁴

The therapy carried out in STT uses a therapy path which in principle there are two, namely the first is with a path that targets to the area or target of therapy and then the second is the determination of the therapy protocol. For the determination of this therapy protocol, it is necessary to determine the characteristic energy of the cause of the problem or it can also target the energy of the symptoms. The whole process is done on the joints/knuckles of the fingers of the hand. This is what distinguishes Triorigin Therapy, Sujok Correspondent, and Sujok Six Ki. The process to get to the target area is done through the 'renting' method with the sequence

of cycles of fingers, joints/knuckles, and points returning to the initial cycle from the fingers. Renting is a term for opening a path to the area to be treated. In therapy using color, this renting is done by giving a green color to the area intended to open the path to the target area of therapy.³⁴

Based on the Triorigin concept, fingers are divided into 4 energies, namely Hetero finger (index finger), Neutro finger (middle finger), Homo finger (ring finger) and Neuto finger (little finger). Each finger has three joints/knuckles which are also divided into 4, namely the upper joint is the Hetero joint, the middle joint is the Neutro Joint and the lower or basic joint is the Homo joint while the Neuto Joint is placed on the nail. Each joint also has 4 energy points namely hetero point, homo point, neutro point and neuto point.³⁴ In the process of renting, if we put green colour (renting) on the Hetero point, the Hetero finger (index finger) will open, and this rule is the same as if we put the green color at another point.

After this process then renting will go to the area as the target of therapy, then this is where the therapy formula is applied.³⁵ In this study, although the method of therapy also uses the concept of correspondent therapy, but most of the therapy is to use the basic concept of Triorigin. In conditions where the cause of the problem is a virus – in this case the COVID-19 condition, Sujok correspondent and in line with energy therapy for example Six Ki energy therapy, cannot be used to target the virus, while Triorigin Therapy can target to overcome the virus.

Although in STT there are many methods to do therapy, including massage, twist, seed pasting, magnets, needles, and others, but in this study, the most widely used method was color therapy. The color in the Triorigin Therapy represents a different energy: including red color for hetero energy, black color for neuto energy, blue color for homo energy and green color for neutro energy. An example of this therapy is in therapy to reduce the strength of the virus, where the path created is to go to the respiratory system and then target the virus, which in this case, the virus falls into the category of hetero energy classification. This therapy to weaken the

virus and also increase immunity has been published in different research and it is found that there has been a decrease in symptoms before and after therapy using this method.²

In Triorigin, there are basically several types of protocols that are carried out, namely protocols to strengthen, weaken, function, and destroy (anti-creation therapy). Therapies aimed at viruses are therapies for anti-creation or destroying viruses and the sequence for the concept of destroying is by sedation at the neutro point, followed by sedation at the homo point, sedation at the hetero point and sedation at the neutro point. As for therapy in the immune system, the chosen protocol is to improve the function of immunity system.

Tonification protocol is done at all points with the sequence of neuto points, hetero points, neutro points and homo points. In addition to using color, the therapy carried out here is to use a thumb placed on a specific area as a target area of therapy (called mudra therapy or PDK in Indonesia). One of these therapies is in the harmonization energy therapy protocol where the thumb is placed to the tip of the little finger. The little finger represents the body's energy system in the Triorigin Model of Body-functional system, so putting the tip of the thumb is one of the processes to harmonize all energy in the body. Some of the effects obtained from this energy harmonization include a sense of calmness and recovery of energy after fatigue condition and some patients who experience sleep problems also benefit from this energy harmonization therapy which is done in about 10-15 minutes with a relaxed position and smiling state.^{35,36}

There are several limitations of this study. First, the proportion of sample between COVID-19 and post COVID-19 is unequal so that authors are unable to compare the results in a more detailed analysis. Second, there is no objective measurement of the symptoms, so for the future study researchers may conduct the objective measurement such as oximetry, blood gas analyses or other relevant methods. Lastly, one of the limitations of this study is the pre-experimental design conducted without control group. It is recommended that more rigorous design is used for future study.

5. Conclusions

STT has been shown to reduce symptoms in patients with COVID-19 and post COVID-19. Given the ease of application of STT and the wide variety of problems that can be treated with STT, it is hoped that this therapy can be an alternative therapy not only in COVID-19 or post-COVID-19 cases, but also in other cases. The level of achievement of targets for community empowerment activities are the improvement of patients' condition. For further community empowerment, the complementary and alternative therapy can be implemented to accompany the conventional biomedical approach as complementary and alternative therapy for COVID-19 patients as well as post COVID-19 patients.

Acknowledgments

Authors extend their thanks to the Department of Nursing, Faculty of Medicine, Public Health and Nursing for the community empowerment grants. We also thank the community partners who accommodated the activities from the assessment to the evaluation process of this community empowerment effort.

Conflict of interests

Authors declare that there is no conflict of interest in any financial, professional, or personal relationships that are relevant to this community empowerment.

References

- Kim TH, Jeon SR, Kang JW, Kwon S. Complementary and alternative medicine for long COVID: scoping review and bibliometric analysis. Liang Z, editor. *Evid Based Complement Alternat Med*. 2022 Aug 4;2022:1–7.
- Nurjannah I. Fourteen days struggling to deal with COVID-19 using Su Jok Therapy: a case report. *J Community Empowerment Health*. 2022;5:6.
- Pinzon-Perez H, Perez MA, Luquis RR (editors). *Complementary, Alternative, and Integrative Health. Multicultural Perspective*. Wiley Press. 2016;323.
- Liem A, Newcombe PA. Indonesian provisional clinical psychologists' knowledge, attitudes, and behaviours towards complementary-alternative medicine (CAM). *Complement Ther Clin Pract*. 2017;28:204–11.
- Park JW. *Su Jok For Everybody* [Internet]. Moscow: Su Jok Academy; 2000. Available from: <https://www.amazon.com/Jok-Everybody-Jae-Woo-Park/dp/5900810224>
- Yagil Z. Sujok therapy for the treatment of fatigue and weakness among oncologic patients. *Quaderno*. 2019;(14):19.
- González ML, González YB, Aguilera NG, Torres WC, Batista MC. Presentation of a patient with elbow hygrome treated with Sujok acupuncture. *Correo Científico Méd Holguín*. 2017;21(2):570–6.
- Safonov MI, Naprienko MV. Analysis of the efficacy of reflexology in the complex treatment of chronic migraine. *Zh Nevrol Psikhiatr Im S S Korsakova*. 2017;117(5):22–5.
- Ubaïdullaev, AM, Sharafutdinova GK, Ismailov SU. Treatment of bronchial asthma by the Su-Jok therapy method. *Ter Arkh*. 1998;70(12):44–6.
- Bedniashina I. Comparative Evaluation of Clinical Effect of Drug therapy and Sujok Therapy in Patients with Vascular Dyscirculatory Encephalopathy. *Onnuri Med*. 2003;12:32–4.
- Huber JCT, Despaigne OLP, García CJ, Díaz R de la CG. Effectiveness of the Su-Jok therapy in patients with pain due to heel spur. *MediSan*. 2016;20(10):5009–17.
- Nurjannah I, Hariyadi K. Su Jok as a complementary therapy for reducing level of pain: A retrospective study. *Complement Ther Clin Pract*. 2021;43:101337.
- Nurjannah I. "Su Jok" therapy and sclerology profile monitoring for managing chest pain at home while avoiding hospital admission during the COVID-19 pandemic: a case study. *Belitung Nurs J*. 2020;6(6):229–32.
- Nurjannah I, Novianti Z, Suharto A, Sudarmo MY, Hariyadi K. Su Jok therapy by twist and seed method of therapy to reduce the level of fear on COVID-19's patient: a case series. *Int J Res Med Sci*. 2021;9(10):3148.
- Nalbandian A, Sehgal K, Gupta A, Madhavan MV, McGroder C, Stevens JS, et al. Post-

- acute COVID-19 syndrome. *Nat Med.* 2021 Apr;27(4):601–15.
16. Fernández-de-las-Peñas C, Palacios-Ceña D, Gómez-Mayordomo V, Florencio LL, Cuadrado ML, Plaza-Manzano G, et al. Prevalence of post-COVID-19 symptoms in hospitalized and non-hospitalized COVID-19 survivors: a systematic review and meta-analysis. *Eur J Intern Med.* 2021 Oct;92:55–70.
 17. Salamanna F, Veronesi F, Martini L, Landini MP, Fini M. Post-COVID-19 syndrome: the persistent symptoms at the post-viral stage of the disease. A systematic review of the current data. *Front Med.* 2021 May 4;8:653516.
 18. Kato A, Shaw R. Yoga and stress management during and post COVID-19 urban lifestyle in Japan. *Asian Journal of Complementary and Alternative Medicine.* 2020; 8 (3), 48-54.
 19. Panda AK, Dixit AK, Rout S, Mishra B, Purad UV, Kar S. Ayurveda practitioners consensus to develop strategies for prevention and treatment of Corona Virus Disease (COVID-19). *J Ayurveda Integr Med Sci.* 2020;5(01):98–106.
 20. Apiwansri J. Exploring the efficacy of herbal and medicinal plants native to China and Thailand as a complementary and alternative treatment in mitigating mild-to-moderate COVID-19 symptoms [Internet]. 2022 [cited 2022 Aug 27]. Available from: <https://scholar.dominican.edu/nursing-senior-theses/56>
 21. Nagral A, Adhyaru K, Rudra OS, Gharat A, Bhandare S. Herbal immune booster-induced liver injury in the COVID-19 pandemic: a case series. *J Clin Exp Hepatol.* 2021 Nov;11(6):732–8.
 22. Tallei TE, Fatimawali, Niode NJ, Idroes R, Zidan BMRM, Mitra S, et al. A comprehensive review of the potential use of green tea polyphenols in the management of COVID-19. De la Puerta R, editor. *Evid Based Complement Alternat Med.* 2021 Dec 3;2021:1–13.
 23. Solnier J, Fladerer JP. Flavonoids: a complementary approach to conventional therapy of COVID-19? *Phytochem Rev.* 2021;20(4):773–95.
 24. Deguma MC, Lumayag CG, Villaganas MAC, Reyes NRTD, Deguma JJ. From anxious loneliness to meditation: a mental health self-care strategy to cope with the COVID-19 pandemic. *J Public Health Oxf Engl.* 2021;
 25. Widha L, Rahmat HK, Basri ASH. A review of mindfulness therapy to improve psychological well-being during the COVID-19 pandemic. In: *Proceeding International Conference on Science and Engineering.* 2021. p. 383–6.
 26. Zhang S, Zhu Q, Zhan C, Cheng W, Mingfang X, Fang M, et al. Acupressure therapy and Liu Zi Jue Qigong for pulmonary function and quality of life in patients with severe novel coronavirus pneumonia (COVID-19): a study protocol for a randomized controlled trial. *Trials.* 2020;21(1):1–11.
 27. Zhang B, Zhang K, Tang Q, Sun K, Han Z. Acupuncture for breathlessness in COVID-19: a protocol for systematic review and meta-analysis. *Medicine (Baltimore).* 2020;99(27).
 28. Salehian MH, Yadolazadeh A, Ranjbari S. Comparison of the effect of cognitive-spiritual method of hope therapy and tai chi exercises on anxiety caused by corona disease in university students. *Pak J Med Health Sci.* 2021;15(3):938–47.
 29. Kuvshinov KE, Khritinin DF, Tyan VN, Karakozov AG, Gryaznova OI, Katenko SV, et al. The use of reflexology in the treatment of asthenic-vegetative syndrome in military personnel who have undergone COVID-19. *Voen-Med Zh.* 2021;342(4):66–7.
 30. Xiao CX, Lin YJ, Lin RQ, Liu AN, Zhong GQ, Lan CF. Effects of progressive muscle relaxation training on negative emotions and sleep quality in COVID-19 patients: A clinical observational study. *Medicine (Baltimore).* 2020;99(47).
 31. Brough N, Abel S, Priddle L. A feasibility study combining psycho-education and mind-body complementary approaches to support those with post COVID-19 syndrome ‘Long COVID’ in a UK based community setting. Available SSRN 4064542. Brough, Nicola and Abel, Sally and Priddle, Lucy, A Feasibility Study Combining Psycho-Education and Mind-Body Complementary Approaches to Support Those with Post COVID-19 Syndrome ‘Long COVID’ in a UK Based Community Setting. Available at SSRN:

- <https://ssrn.com/abstract=4064542>.
32. Xia Y, Qi W, Li X, Yang Y, Cao J. Clinical efficacy and safety of Qingshu Yiqi decoction as a complementary and alternative therapy for COVID-19 with Delta variant: a protocol for systematic review and meta-analysis. *Medicine (Baltimore)*. 2021;100(50).
 33. Park JW. *The Six Energy Theory Illustrated Handbook*. Jaipur; 2002.
 34. Park JW. *Triorigin Acupuncture* [Internet]. [cited 2022 Aug 28]. Available from: <https://www.amazon.com/Triorigin-Acupuncture-Prof-Sujok-Rings/dp/B07G19M52P>
 35. Nurjannah I, Isa AS. *Application of Therapy Based On Triorigin Theory (1st Book Series: Triorigin Sequence)* [Internet]. 1st ed. Vol. 1. Yogyakarta: Self Publishing; 2021 [cited 2022 Aug 28]. Available from: [https://shopee.sg/Application-of-Therapy-Based-On-Triorigin-Theory-\(1st-Book-Series-Triorigin-Sequence\)-i.379286167.15350802885](https://shopee.sg/Application-of-Therapy-Based-On-Triorigin-Theory-(1st-Book-Series-Triorigin-Sequence)-i.379286167.15350802885)
 36. Park JW. *Triorigin Smile Meditation*. Jaipur; 2004.

Implementation of the SMart-Punakawan COVID-19: Empowering communities and families against COVID-19

Eti Poncorini Pamungkasari,¹ Bulan Kakanita Hermasari,¹ Sri Anggarini Parwatiningsih,¹ Sri Mulyani,² Hartono,¹ Lely Tri Pangesti²

¹ Medical and Health Profession Education Research Group, Universitas Sebelas Maret, Surakarta, Indonesia

² Disease Control Research Group, Universitas Sebelas Maret, Surakarta, Indonesia

SUBMITTED: 20 Desember 2021 REVISED: 10 November 2022 ACCEPTED: 29 November 2022

KEYWORDS

SMart-Punakawan
COVID-19 health
education
Health education
media

ABSTRACT The end of the Corona Virus Disease 2019 (COVID-19) pandemic cannot be predicted. In June 2021 and again in February 2022, there have been very significant increases in new cases. The government has tried to control transmission by launching the 5M propaganda, which consists of wearing masks, keeping the distance from each other, washing hands with soap, avoiding crowds, and reducing mobility. However, there are still problems existing related to community compliance in preventing the transmission of COVID-19, for example, low participation in the use of masks and avoiding crowds. The aim of this project is to develop and implement health education media related to 5M and COVID-19 vaccinations. This project started with the development of the education media considering the local cultural wisdom, in order for it to be easily accepted by the community. The term SMart-Punakawan COVID-19 (Sebelas Maret-Pendampingan UNtuk mAsyarakat dan KeluargA melaWAN COVID-19) was chosen to name this media. Punakawan is a puppet character, the "servant" of the knights but who has an important role as an advisor, so it is very suitable to represent health workers. There are several media used to convey the SMart-Punakawan including videos, banners, brochures and these were implemented to the community either face-to-face or online (YouTube, and WhatsApp group) in order to reach the wider community. The effectivity of this project was measured quantitatively using instruments to measure knowledge about 5M and COVID-19 vaccinations before and after implementation. We used the Wilcoxon test because the data were not normally distributed. According to the results, there were significant differences in respondents' knowledge before and after implementation ($p < 0.001$). The SMart-Punakawan is effective in improving people's knowledge related to 5M and COVID-19 vaccinations. However, further exploration is still needed to know the full impact of the SMart-Punakawan in changing people's behavior.

© The Journal 2022. This article is distributed under a [Creative Commons Attribution-ShareAlike 4.0 International license](https://creativecommons.org/licenses/by-sa/4.0/).

1. Introduction

The Corona Virus Disease 2019 (COVID-19) was first reported in Wuhan, China, in December 2019. After that, it gradually spread to various countries until it was designated a global pandemic by the World Health Organization (WHO) in March 2020.¹ COVID-19 is an acute respiratory disease caused by SARS-CoV-2.¹ This disease causes relatively high mortality, especially in the elderly and patients with

aggravating medical factors such as cardiovascular disease, diabetes, and cancer.² As a result of its sudden and rapid spread, COVID-19 has caused significant changes in the global health care system that have impacted various aspects of human life.³

A study stated that several sectors are affected by the spread of this disease, such as health, agriculture, industry, tourism, and education.³ The uncertainty of how long this pandemic will last leads to a 'new normal' life condition, where quarantine and physical distancing will still be needed indefinitely in social life.¹

The Indonesian government has launched the Five M (5M) procedure which consists of wearing

*Correspondence: intansarin@ugm.ac.id
Department of Mental Health and Community Nursing,
Faculty of Medicine, Public Health and Nursing, Universitas
Gadjah Mada, Jl. Farmako, Sekip Utara, Yogyakarta 55281,
Indonesia.



Figure 1. Implementation of SMart-Punakawan in Purwodiningratan public health care.



Figure 2. SMart-Punakawan video on YouTube channel.

masks, keeping the distance from each other, washing hands with soap, avoiding crowds, and reducing mobility. However, the level of community compliance with the basic 3M's health protocols, namely wearing masks, maintaining safe distance and washing hands, is still not satisfactory. Based on the COVID-19 Indonesian Task Force data, the monitoring of health protocol discipline, which has been done since November 18, 2020, indicated the graph had fluctuated starting in November 2020.⁴

Therefore, assistance activities for the community related to 5M regarding COVID-19 need to be conducted. The community's character with a solid social life can be used to assist this community. Surakarta is an area with a reasonably solid cultural background and active arts life. By incorporating

cultural elements in community assistance, it is hoped to strengthen the delivery of the health messages given. The cultural aspect used in this study is Punakawan. Punakawan is the clown servant of the hero in Javanese shadow puppet performances (wayang).

Punakawan symbols and the delivery of health messages to the community through dialogues of figures in Punakawan, is one way to insert humor as a feature of Punakawan that is considered touching, which will cause the messages conveyed to be more readily accepted by the community. Several media were used to represent the material, including videos, banners, leaflets so that they are expected to reach the wider community (figure 1). Videos and presentations about SMart-Punakawan were given

offline to the community in the Purwodiningratan Public Health Center area in training on 5M, or online, namely videos and leaflets that were widely distributed through social media such as WhatsApp groups and YouTube (figure 2). This study aimed to analyze the effectivity of the implementation of SMart-Punakawan to improve people's knowledge about COVID-19 disease in Surakarta.

2. Method

This cross-sectional study was conducted in Surakarta, Indonesia and followed a community service program named SMart-Punakawan. The community services comprise educational media such as videos, presentations, and leaflet about SMart-Punakawan. The medias were given to the community in the Purwodiningratan Public Health Center. In addition, videos and leaflets were widely distributed through social media (WhatsApp groups and YouTube). The video was played during offline community activities, through a wall mounted LCD screen, and have been seen by the people who were visiting the Public Health Center. The target population of this study was people who were visiting Purwodiningratan Public Health Center. Respondents was taken by consecutive sampling.

To evaluate the program, a pre-test and post-test were conducted. The pre-test and post-test instruments have Cronbach alpha of 0.58. Then the pre-test and post-test data were analyzed using Wilcoxon test because the data were not normally distributed. This study has received an ethical clearance letter from the Faculty of Medicine Universitas Sebelas Maret ethics committee with letter number 42/UN.27.06.6.1/KEP/EC/21.

3. Result

We visited Purwodiningratan Public Health Center on August 28, in 2021 in order to implement the SMart-Punakawan. We met the people who were there and gave them education about 5M and COVID-19 vaccinations. We discussed with the public health center visitors (patients and family), and they were very enthusiastic, as seen from the many question that they addressed to us.

For example, there were questions about when

Table 1. Characteristics of the respondents.

| Characteristics | N | % | Min | Max |
|--------------------------|---|------|-----|-----|
| Sex | | | | |
| Male | 5 | 11 | | |
| Female | | 21 | | |
| Education | | | | |
| Elementary school | 2 | 3.4 | | |
| Junior high school | 5 | 8.6 | | |
| Senior high school | | 41.4 | | |
| University | | 46.6 | | |
| Occupation | | | | |
| Unemployment | | 32.8 | | |
| Government employees | 4 | 6.9 | | |
| Private sector employees | | 27.6 | | |
| Have own business | | 32.8 | | |
| Age | | | 18 | 68 |

Min, Minimum; Max, Maximum

Table 2. Respondents' knowledge score before and after implementation of the SMart-Punakawan.

| Measurement time | N | Min | Max | Mean±SD |
|------------------|----|-----|-----|---------------|
| Pretest/ before | 58 | 50 | 100 | 78.45 ± 14.96 |
| Posttest/ after | 58 | 70 | 100 | 88.97 ± 8.72 |

SD, standard deviation; Min, Minimum; Max, Maximum

could COVID-19 survivors be vaccinated, what types of COVID-19 vaccine are the good ones for them, and so on. We played the SMart-Punakawan video through Public Health Center LCD screen, and placed the banners in public spaces in the Purwodiningratan Public Health Center, and also handed out flyers and masks for the people.

Besides at the Purwodiningratan Public Health Center, we also implemented the SMart-Punakawan via online and social media. We shared the SMart-Punakawan videos through the YouTube channel and community WhatsApp group in order to reach the wider community. On October 2021, we also distributed the banner and videos of the SMart-Punakawan to Public Health District Office.

To evaluate the effectivity of the SMart-Punakawan as health education media, especially in promoting 5M and COVID-19 vaccinations, we collected data before and after respondents were exposed with SMart-Punakawan as shown in Table 1. We shared the survey instrument in the WhatsApp

group and 58 respondents completed it.

We tested the data distribution using Kolmogorov-Smirnov tests. The data as shown in Table 2 were not normally distributed ($p = 0.048$) so we used Wilcoxon test to measure the effectiveness of the SMart-Punakawan program. The result of the Wilcoxon test shows p value < 0.001 , that indicated there was a significant difference in the respondents' knowledge before and after exposure with SMart-Punakawan media. It can be said that the SMart-Punakawan program was effective in improving people's knowledge about 5M and COVID-19 vaccinations.

4. Discussion

The results of this study indicated that there was a significant difference in the respondents' knowledge before and after exposure to the SMart-Punakawan media, so SMart-Punakawan is effective in increasing people's knowledge about COVID-19. Health education is very important to increase people knowledge, attitude and health practice. Awareness about the right health information is an important concern for the community, especially in the era of the COVID-19 pandemic. There is so much information circulating on social media, but people may find it difficult to distinguish between right and wrong information. The SMart-Punakawan is one of the media for health education, which aims to improve health knowledge in the short-term period, and then we hope it will affect their attitudes and health practices.

The evaluation showed that Smart Punakawan was effective in increasing public knowledge about the 5M and COVID-19 vaccinations. Health education related to COVID-19, which was developed by considering local wisdom, is accessible to people of all ages. One of the targeted populations is the elderly, who during this pandemic are the vulnerable groups. The elderly are a group that may have access to the outside world that is different from younger people.⁵ Previous research stated that health education for the elderly can use print or video media.⁶

Health promotion for the elderly can also be done online, for example by distributing videos to maintain the health of the elderly in the era of the

COVID-19 pandemic.⁷ The results of this activity are in accordance with previous research which stated that the mass media had an important role in conveying health information to the public during the COVID-19 pandemic.^{7,8}

However, it should be considered that not all elderly people in Indonesia have access to gadgets that can download videos that are distributed through mass media or social media. For this reason, comprehensive health promotion is needed through various activities, offline and online. In this study not only were the elderly exposed with SMart-Punakawan, but for wider community, we wanted to know how young people could accept this media, so the benefit of this program could become wider too. The result showed that this education program was effective in increasing people's knowledge. So, from this study we know that SMart-Punakawan was not only accept limited for elderly, but SMart-Punakawan was well-received by the young people as well. We hope that young people could share this information to elderly who live in the same house with them.

In this study, in quantity, female respondents were more than male. Respondents who filled in the questioner are people who were exposed by SMart-Punakawan, and agreed to become our respondents. From all of the community member who came to Purwodiningratan Public Health Center at that time or joined the SMart-Punakawan WhatsApp group, more female respondents agreed to sign the informed consent form and fill in the pre-test and post-test compared with males. Some reasons for this were because in this study population, males tended to have more activities than females as workers, so they did not have time to fill in the pre-test and post-test after being exposed to SMart-Punakawan.

Regarding the COVID-19 pandemic, previous research has shown that social media has an important role in disseminating information.⁹ For example, regarding vaccinations, there is much information in the community, both true and false. Social media is now the main source of information. Health service institutions need to develop health workforce resources related to health promotion capabilities through digital social media.¹⁰

Research in China suggests that young and high-

income people tend to underestimate the safety of vaccines.¹¹ With various types of SMart-Punakawan media exposure to the public, online and offline, it can reach people from various groups of the community. It can be seen from the respondents who filled in the evaluation form that varied in age from 18-68 years, with variations in education levels from elementary to college, as well as variations in terms of employment. Social media have positive and negative impacts in the COVID-19 pandemic era, both for health care providers and for the community. Positive impacts for the community include people could obtain government announcements rapidly as well as they could follow instructions from the government easier.

Much data which were not verified is one of the negative impacts, along with the possibility that false information could be received by the community.¹⁰⁻¹³ To remove incorrect information about COVID-19, transparency, good information governance and strong leadership are needed.¹⁴ Social media may have some potential limitations, so in response, the health care providers are important to have roles as leaders in social media.¹⁵

Some limitations of this project are we did not observe changes in people's behavior about 5M and vaccination, because when we implemented this program, the government still imposed the people's activity restriction due to the increasing incidence of COVID-19. If we want to measure behavior change then we have to follow the respondents for a longer period of time. Accordingly, the impact about the effect of SMart-Punakawan in people's behavior is not yet fully known. The strength of this project is that it is an educational media that was developed by considering local wisdom, using figures who have been known by the public in conveying health information, so that the information obtained is more easily accepted by the community. Another aspect is the SMart-Punakawan was shared with the community in several ways, online and face-to-face (offline) so it can reach the wider community.

5. Conclusion

The SMart-Punakawan is effective in improving people's knowledge about 5M and COVID-19

vaccinations. However, further exploration is still needed to evaluate the effect of the SMart-Punakawan program in improving people's behavior about 5M and COVID-19 vaccinations, in order to prevent COVID-19 transmission and reduce the incidence of COVID-19.

Acknowledgment

We would like to say thank you to The Ministry of Education and Culture through Universitas Sebelas Maret Surakarta for financing this project in the Community Service Grant scheme. And also we would like to deliver our gratitude to dr. Faradilla Mirshanti, MPH and Purwodiningratan Public Health Center, also the Government of Surakarta District for being partners in this project.

Conflict of interest

There is no conflict of interest in this project.

References

1. World Health Organization. Infection Prevention and Control guidance for Long-Term Care Facilities in the context of COVID-19. 2020 p. 1–5.
2. Shaw R, Kim Y, Hua J. Governance, technology and citizen behavior in pandemic: lessons from COVID-19 in East Asia. *Progress in Disaster Science*. 2020; 6:100090.
3. Nicola M, Alsafi Z, Sohrabi C, Kerwan A, Al-jabir A, Iosifidis C, et al. The socio-economic implications of the coronavirus pandemic (COVID-19): a review. *Int J Surg*. 2020; 78:185–93.
4. Satuan Tugas Penanganan COVID-19. Kepatuhan Masyarakat Terhadap Protokol Kesehatan Harus Ditingkatkan - Berita Terkini | Covid19.go.id. [cited 2021 Nov 17]. Available from: <https://covid19.go.id/p/berita/kepatuhan-masyarakat-terhadap-protokol-kesehatan-harus-ditingkatkan>
5. Chiu C, Hu J, Lo Y, Chang E. Health promotion and disease prevention interventions for the elderly: a scoping review from 2015–2019. *Int J Environ Res Public Health*. 2020; 17: 5335
6. De Moura Sa GG, Silva FL, dos Santos AMR, dos Santos Noleto J, de Olineira Gouveia MT,

- Nogueira. Technologies that promote health education for the community elderly: Integrative Review. *Rev Latino-Am Enfermagem*. 2019; 27: e3186
7. Aung MN, Yuasa M, Koyanagi Y, Aung TNN, Moolphate S, Matsumoto H, et al. Sustainable health promotion for the seniors during COVID-19 outbreak: a lesson from Tokyo. *J Infect Dev Ctries*. 2020; 14 (4): 328-331
 8. Anwar A, Malik M, Raees V, Anwar A. Role of mass media and public health communications in the COVID-19 pandemic. *Cureus*. 2020; 12(9): e10453
 9. Van den Broucke, Stephen. Why health promotion matters to the COVID-19 pandemic, and vice versa. *Health Promot Int*. 2020; 0 : 1-6
 10. Gonzales-Padilla DA, Tortolero-Blanco L. Social media influence in the COVID-19 pandemic. *Int Blaz J Urol*. 2020; 46 (suppl1): 120-124
 11. French J, Deshpande S, Evans W, Obregon R. Key guidelines in developing a pre-emptive COVID-19 vaccination uptake promotion strategy. *Int J Environ Res Public Health*. 2020; 17: 5893
 12. Leng A, Maitland E, Wang S, Nicholas S, Liu R, Wang J. Individual preferences for COVID-19 vaccination in China. *Vaccine*. 2021; 39: 247-254
 13. Venegas-Vera, AV, Colbert GB, Lerma, EV. Positive and negative impact of social media in the COVID-19 era. *Rev Cardiovasc Med*. 2020; 21(4): 561-564
 14. Tasnim S, Hossain MdM, Mazumder H. Impact of rumors and misinformation on COVID-19. *J Prev Med Public Health*. 2020; 53 (3): 171-174
 15. Gottlieb M, Dyer S. Information and disinformation: social media in the COVID-19 crisis. *Acad Emerg Med*. 2020; 27 (7) : 640-641.

Evaluation of community empowerment program for elderly care: Lessons learned from PUSAKA Wahyu Teratai

Syamsumin Kurnia Dewi

Yogyakarta Physiotherapy Academy

SUBMITTED: 24 Desember 2020 REVISED: 30 November 2022 ACCEPTED: 01 Desember 2022

KEYWORDS

Community empowerment
Elderly care
Program evaluation

ABSTRACT The current paradigm and health development policy in Indonesia have changed from development to empowerment. The community empowerment program for elderly care "PUSAKA Wahyu Teratai" is a leading community empowerment program in the subdistrict of Bambanglipuro, Bantul Regency. This study was conducted to evaluate The PUSAKA Wahyu Teratai program based on input, process, output, and outcome. This cross-sectional study was conducted in December 2019. Data on the input, process, and output were collected by interviewing three caretakers with a questionnaire and tracking organizational documents and activity reports, and observing activities implementation. The outcome in the form of 63 participants' quality of life was measured by the Short Form-36 Questionnaire. Data were analyzed descriptively. Evaluation of the input showed: most of the caretakers were male (77.33%), entrepreneurs, with senior high school education level (26.67%). Most of the facilities and infrastructure belong to the organization, the principal source of funds from Yayasan Kesejahteraan Sosial Teratai Jakarta, which were sufficient. Evaluation of the process showed: all main activities were well-scheduled and conducted routinely and documented. Evaluation of the output showed: the level of participation in each activity was between 67.61% - 100.00%. The outcome evaluation showed that the mean score of quality of life domains was: Physical Functioning (88.17 ± 20.29), Role-Physical (71.03 ± 27.75), Bodily Pain (66.98 ± 17.47), General Health (54.76 ± 12.65), Vitality (64.29 ± 15.99), Social Functioning (71.14 ± 16.08), Role-Emotional (68.05 ± 34.71), and Mental Health (72.44 ± 14.57). The PUSAKA Wahyu Teratai has sufficient capital input, a fair implementation process of activities, and produced exceptional outputs and outcomes.

© The Journal 2022. This article is distributed under a [Creative Commons Attribution-ShareAlike 4.0 International license](https://creativecommons.org/licenses/by-sa/4.0/).

1. Introduction

The current paradigm and health development policy in Indonesia have changed from development to empowerment.¹ In the Republic of Indonesia Law Number 36 of 2009 concerning Health Article 174, Paragraphs 1 and 2 state that the community participates, both individually, as well as in an organized manner, in all forms and stages of health development to help accelerate the attainment of the highest public health status. This participation includes active and creative participation.²

Empowerment is a process that enables people to increase control over decisions and actions that affect public health, to mobilize vulnerable individuals

and groups by strengthening their basic social and economic life skills.³ Community empowerment in the health sector is an effort to develop the knowledge, attitudes, and behavior of the community so that they are more capable of dealing with the health problems they face.⁴

Regarding the elderly health policy, Article 140 states that healthcare efforts for the elderly are to be conducted by the government, local government, and/or the community.² The Law Number 13 of 1998 concerning Elderly Welfare Article 22, Paragraphs 1 and 2 provide the broadest possible opportunity for the community (individuals, families, groups, communities, social organizations, and or community organizations) to play a role in efforts to improve the welfare of the elderly.⁵ Coupled with the limited resources, funds, and personnel from the local

*Correspondence: drdewik98@gmail.com
Yogyakarta Physiotherapy Academy, Jl Ring Road Selatan
Giwangan Umbulharjo Jogjakarta 55163, Indonesia.

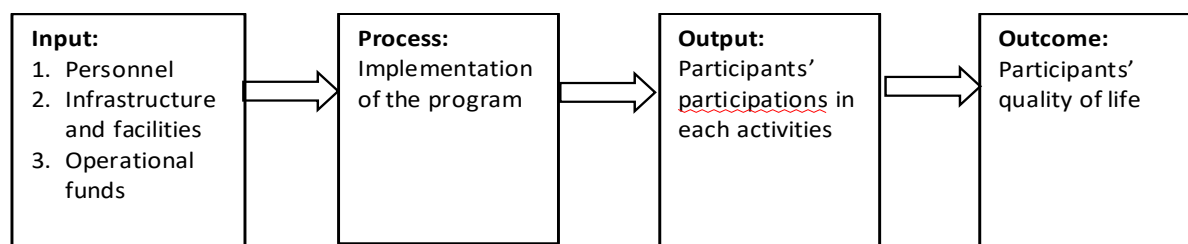


Figure 1. Evaluation scheme of PUSAKA Wahyu Teratai.

government, community empowerment programs that aim to improve the quality of life and the welfare of the elderly are very important to be developed and increased in quantity and quality.⁶

Forms of community empowerment programs that focus on elderly services which have been developed so far include the following: “Posyandu Lansia” or Community Elderly Care Service (CECS) and “Pusat Santunan Dalam Keluarga” (PUSAKA) or a Family Support Center.^{7,8} CECS is a forum for community-based health efforts for serving the elderly. The formation and implementation processes are carried out by the community, non-governmental organizations (NGOs), government and non-government sectors, the private sector, social organizations, and others, emphasizing promotive and preventive efforts.⁹ Additionally, PUSAKA is a community empowerment program that focuses on improving the welfare of the elderly through cross-sector service activities and the provision of non-nursing homes based on local families/communities.⁸

PUSAKA Wahyu Teratai is a community empowerment program located at Prenggan hamlet, Sidomulyo Village, Bambanglipuro sub-district, Bantul Regency, Yogyakarta. This program was formed by the Prenggan community in 2008 and coached by Yayasan Kesejahteraan Sosial Teratai (YKST) Jakarta, which is a NGO engaged in social services in Indonesia, especially for the elderly. The purpose of PUSAKA Wahyu Teratai is to help provide services to the elderly in Prenggan, especially those who have less welfare based on the Indonesian Ministry of Social Affairs criteria.¹⁰

A previous study showed that among the various forms of community empowerment for elderly care in Bantul Regency, the PUSAKA Wahyu Teratai program has very comprehensive activities. These activities

include: health examinations, supplementary food, light exercise, economic empowerment, local art activities, spiritual education, and recreational programs.¹¹ Another study showed that there are also activities of social solidarity and donations/gifts for elderly participants.¹² It motivated other elderly groups or communities to implement a similar model of activities.¹¹

The chairman of YKST Jakarta, as the coach of PUSAKA Wahyu Teratai, stated that PUSAKA Wahyu Teratai is the best PUSAKA program among all other PUSAKA programs coached by YKST Jakarta in Indonesia. The preliminary study showed that this program is a leading village innovation program in the Bambanglipuro sub-district area. This program is currently growing and has also played a role as the object of some research and community service projects. It is a positive contribution to society while many community empowerment programs have stopped or are running stagnant for various reasons.

Until now, the PUSAKA Wahyu Teratai program has never been evaluated. Given that this program can be developed, it is crucial to conduct an evaluation based on input, process, output, and outcome aspects. Its results can be used for recommendations for improvements to the caretakers, YKST Jakarta, and the local government of Sidomulyo. In addition, social organizations and other community groups can adopt activities that are following their conditions. Therefore, the author was interested in evaluating more deeply about the PUSAKA Wahyu Teratai program, based on its input, process, output, and outcome.

2. Methods

This observational-descriptive research was conducted with a cross-sectional study design, to



(a)



(b)



(c)



(d)



(e)



(f)



(g)



(h)

Figures 2. Documentation of PUSAKA Wahyu Teratai activities. (a) Health examination. (b) Supplementary food. (c) Elderly gym. (d) Morning walking. (e) Economic empowerment. (f) Recreation. (g) Delivery lunch. (h) Eid gifts.

Table 1. The formula for the scoring and transformation subscale of the SF-36 questionnaire.¹⁶

| Subscale (Domain) | The total score of the final item (according to the item code in the table) | Possible lowest and highest row scores | Possible row score ranges |
|-------------------|---|--|---------------------------|
| PF | 3a, 3b, 3c, 3d, 3e, 3f, 3g, 3h, 3i, 3j | 10, 30 | 20 |
| RP | 4a, 4b, 4c, 4d | 4, 8 | 4 |
| BP | 7, 8 | 2, 12 | 10 |
| GH | 1, 11a, 11b, 11c, 11d | 5, 25 | 20 |
| VT | 9a, 9e, 9g, 9i | 4, 24 | 20 |
| SF | 6, 10 | 2, 10 | 8 |
| RE | 5a, 5b, 5c | 3, 6 | 3 |
| MH | 9b, 9c, 9d, 9f, 9h | 5, 30 | 25 |

Table 2. Respondents' knowledge score before and after implementation of the SMart-Punakawan.

| Personnel aspect | n (%) |
|------------------------------|------------|
| Number of main caretakers | 15 |
| Sex | |
| Male | 11 (77.33) |
| Female | 4 (26.67) |
| Occupation: | |
| Sidomulyo government officer | 2 (13.33) |
| Head of hamlet | 1 (6.67) |
| Religious leader | 1 (6.67) |
| Medical worker | 2 (13.33) |
| Lecturer | 2 (13.33) |
| Civil servant | 2 (13.33) |
| Entrepreneur | 5 (33.33) |
| Level of education | |
| Elementary school | 0 (0.00) |
| Junior high school | 3 (20.00) |
| Senior high school | 4 (26.67) |
| Diploma III | 2 (13.33) |
| Bachelor | 3 (20.00) |
| Magister | 3 (20.00) |

describe the results of the evaluation of the PUSAKA Wahyu Teratai program based on input, process, output, and outcomes in 2019.¹³ This study was conducted at PUSAKA Wahyu Teratai, Prenggan, Sidomulyo, Bambanglipuro, Bantul, Yogyakarta, in December 2019. The evaluation scheme of the study is shown in Figure 1.

The population of the study is 15 caretakers and 71 participants of PUSAKA Wahyu Teratai. Subjects of

the input, process, and output were three caretakers of PUSAKA Wahyu Teratai: the head of Prenggan/ chairman, secretary, and physical exercise manager. Subjects of the outcome were participants of PUSAKA Wahyu Teratai selected through purposive sampling. The inclusion criteria were: community members who were registered as a participant of PUSAKA Wahyu Teratai and agreed to be the research subject. The exclusion criteria were: having any difficulties or inability to communicate with others and or suffering from cognitive impairment (score of the Mini-Mental State Examination Questionnaire <24).¹⁴ Of the 71 participants, only 63 (88.73%) met the inclusion criteria and passed the exclusion criteria.

Data on the input, process, and output were collected by interviewing three caretakers with a questionnaire, tracking organizational documents and activity reports, and observing activities implementation every Sunday morning in December 2019. Evaluation of input aspects conducted on personnel, infrastructure and facilities, and operational funds. Evaluation of process aspects was done on efforts to implement the program. Evaluation of the output was also done on participants' participation in each activity.

Data on the outcome were collected by measuring participants' quality of life with The Short Form (SF)-36 Questionnaire translated into Indonesian. The previous study showed the Indonesian version of this questionnaire was considered valid and reliable.¹⁵ The SF-36 questionnaire consists of 8 subscales (domains): Physical Functioning (PF): 10 items, Role-Physical (RP): 4 items, Bodily Pain (BP): 2 items, General Health (GH): 5 items, Vitality (VT): 4 items, Social Functioning (SF): 2 items, Role-Emotional (RE): 3 items, and Mental Health (MH): 5 items. The method of scoring and the transformation of The SF-36 Questionnaire is shown in Table 1.¹⁶

Based on the guidelines in Table 1, The SF-36 Questionnaire answer scores were transformed using this formula:¹⁶

$$\text{Score transformation} = \frac{(\text{actual row score} - \text{possible lowest row score})}{\text{the difference between the highest and lowest scores}} \times 100$$

Table 3. Infrastructures, facilities, and funds evaluation of PUSAKA Wahyu Teratai, 2019.

| Input aspects | Availability and ownership |
|---|--|
| Infrastructure and Facilities: | |
| Organizational secretariat | Available: head of Prenggan house |
| Medical examination tool | Available: organization and caretakers |
| Supplementary food cooking ware | Available: organization |
| Supplementary food serving tools | Available: organization |
| Delivery of lunch equipment | Available: organization |
| Gamelan arts instrument | Available: Prenggan community |
| Sound system equipment | Available: Prenggan community |
| Documentation and activities report tools | Available: organization and Prenggan community |
| Funds: | |
| a. Operational funds | Available |
| b. Operational funds sources: | |
| YKST Jakarta | Principal source transferred monthly |
| PUSAKA Wahyu Teratai | Comes from profit sharing of economic empowerment activities |
| The Sidomulyo village government | One time |
| Other donors: | Routinely (drugs donor): medical worker caretaker Incidentally (one time): Medical Faculty of Indonesian Islamic University |
| c. Operational funds sufficiency | Sufficient |

Table 4. Program implementation evaluation of PUSAKA Wahyu Teratai, 2019.

| Schedule activities | | | | |
|--|--|---|---|---|
| 1st week | 2nd week | 3rd week | 4th week | 5th week |
| 1.Opening | 1.Opening | 1.Opening | 1.Opening | 1.Opening |
| 2.Walking | 2.Walking | 2.Walking | 2.Walking | 2.Walking |
| 3.Supplementary food and social welfare contribution | 3.Supplementary food and social welfare contribution | 3.Supplementary food and social welfare | 3.Supplementary food and social welfare | 3.Supplementary food and social welfare |
| Health examination | 4.Delivery lunch | 4.Spiritual education | 4.Elderly gym 5.Delivery lunch | 4.Local art activities |

The evaluation data on the input, process, output, and outcome aspects are then analyzed descriptively and shown in tabular form. Documentation of activities is shown through pictures of community members participating in the regularly scheduled PUSAKA Wahyu Teratai activities. The analysis of the participant's quality of life scores was conducted on the mean and standard deviation (SD) of each subscale of The SF-36 Questionnaire.¹⁷

3. Results

PUSAKA Wahyu Teratai is a social organization located at Prenggan, Sidomulyo, Bambanglipuro, District of

Bantul, Yogyakarta. This organization was formed by the Prenggan community on April 8th, 2008, through the Decree of the Chairman of YKST Sidomulyo Number: 05/YKST/IV/2008. As the initiator and coach of the organization YKST Jakarta. This organization aimed to provide elderly care services in Prenggan. Based on the coordination meeting between the caretakers, YKST Jakarta, the local government of Sidomulyo, and community leaders, a total of 74 elderly residents in Prenggan were assessed as assisted elderly.¹⁰

PUSAKA Wahyu Teratai activities are conducted based on community support assisted by local

Table 5. Output evaluation of PUSAKA Wahyu Teratai, 2019.

| Type of activities | Participation (%) |
|---|-------------------|
| Implementation of the main activities: | |
| Health examination | 88.73 |
| Supplementary food | 100 |
| Light exercises: | |
| Walking | 100.00 |
| Elderly gym | 67.61 |
| Economic empowerment | 67.61 |
| Local art activities | 100.00 |
| Spiritual education | 78.87 |
| Recreation | 78.87 |
| Delivery lunch | 67.61 |
| Implementation of additional activities: | |
| Eid gift | 100.00 |
| Social service | 100.00 |
| Implementation of activities managed by assisted elderly: social welfare contribution | 100.00 |

social volunteers. To oversee the implementation of the activity, YKST Jakarta and YKST Sidomulyo appointed four program assistants who came from retirees of the Indonesian Ministry of Social Affairs. In the beginning, the activities done in this program included: health examinations, light exercise (walking and elderly gym), spiritual education, supplementary food, and lunch delivery. The first activity was held on April 13th, 2008, and then the activity was held every Sunday morning from 06.30 until finished.¹⁰

Currently, the number and types of these activities are growing. It follows the development of the organizational capacity of PUSAKA Wahyu Teratai under the coach of YKST Jakarta. The number of participants also increased from the beginning of its formation in 2008, amounting to 74 elderlies to 84 in 2014. However, in 2019 the number decreased to 71 elderly because several elderly passed away in the last five years.¹⁸

The input evaluation aspect was conducted on the personnel element, infrastructure, facilities, and operational funds. Evaluation of the personnel element of the PUSAKA Wahyu Teratai program is shown in Table 2.

Based on Table 2, most of the PUSAKA Wahyu

Teratai caretakers are male, work as entrepreneurs, and have senior high school education. Based on the observation the caretakers served according to their respective fields of expertise, while community leaders were tasked with unifying and generating participants and communicating existing activities.

Results of the evaluation of the input aspects of infrastructure, facilities, and operational funds for the PUSAKA Wahyu Teratai program are shown in Table 3.

Table 3 shows that most of the infrastructure and facilities used by PUSAKA Wahyu Teratai belong to the organization. The rest belong to the Prenggan community. The principal source of operational funds for activities comes from YKST Jakarta. These funds were sufficient for the budget of the activities conducted. Based on the organizational documents, in the previous year funds came from several other sources, such as the Indonesian Ministry of Social Affairs, the Yogyakarta Special Region Provincial Social Service, and the Bantul Regency Social Service.^{10,12}

Results of the evaluation of process aspects conducted in efforts to implement the program in 2019 are shown in Table 4.

Table 4 shows the program activities have been arranged in a weekly schedule. Observations showed the participants are accompanied by a person in charge of each activity. Walking and supplementary food are routine weekly activities. Health examinations, spiritual education, and local arts are routine monthly activities, while the delivery lunch activity is held every two weeks. Field observations indicated that documentation of activities has been done, although there are still many aspects that need to be completed. Activity reporting has been conducted in an annual report submitted to YKST Jakarta and other related parties.

The documentation of some of the activities conducted by PUSAKA Wahyu Teratai can be seen in Figure 2. Based on Figure 2, it appears that there are also incidental activities in the form of giving Eid gifts and social services.

Results of the evaluation of the output aspect in the form of participation in the activities held at PUSAKA Wahyu Teratai are shown in Table 5.

Table 6. Outcome evaluation of PUSAKA Wahyu Teratai, 2019.

| Type of activities | Participation (%) |
|---|-------------------|
| Implementation of the main activities: | |
| Health examination | 88.73 |
| Supplementary food | 100 |
| Light exercises: | |
| Walking | 100.00 |
| Elderly gym | 67.61 |
| Economic empowerment | 67.61 |
| Local art activities | 100.00 |
| Spiritual education | 78.87 |
| Recreation | 78.87 |
| Delivery lunch | 67.61 |
| Implementation of additional activities: | |
| Eid gift | 100.00 |
| Social service | 100.00 |
| Implementation of activities managed by assisted elderly: social welfare contribution | 100.00 |

Based on Table 5, it appears that, in general, the level of participation is very good. The highest participation of 100% was achieved in supplementary food, delivery lunch, giving Eid gifts, social services, and social welfare contributions. Observations showed 12 participants (16.90%) suffered from chronic pain and physical limitations in their daily living activities. As a result, these participants were not always able to attend every activity. Usually, the participants can attend if their conditions were better and/or accompanied by families or other participants.

Concerning the physical limitations of the elderly, in the current economic empowerment activities, planting of Kepok banana, Raja banana, Ambon banana, and California papaya trees are chosen, which do not require much maintenance but have high economic value.^{10,12} Economic empowerment is an activity that aims to increase the economic capacity of the community, either directly (for example, providing venture capital, and economic skills education) or indirectly (for example: protecting the economically weak).¹⁹ Based on the organizational documents, the economic empowerment was initially done by raising Etawa

Crossbred (EC) goats. However, due to the physical limitation of the elderly and the lack of skills in raising EC goats, this activity was not successful. Finally, the caretakers, participants, and YKST Jakarta agreed to replace this form of economic empowerment with a more appropriate forum and form of livelihood.

Furthermore, the evaluation of the outcome aspect is the quality of life of participants. The results of this evaluation are presented in Table 6. The highest mean score of the quality of life subscale (domain) is Physical Function (88.17 ± 20.29), and the lowest is General Health (54.76 ± 12.65).

4. Discussion

Based on the evaluation results, the PUSAKA Wahyu Teratai has a reasonably good input capital and a fair process of implementing activities. It is resulting in a reasonably high level of participation among the participants in each activity. Also, the outcome is a good quality of life for the participants.

Community empowerment is one of the seven health management components mentioned in Presidential Regulation Number 72 of 2012 concerning the National Health System Articles 2 and 3. In Article 7 paragraph 3, health development's basic principles consist of humanity, empowerment and independence, justice, equitable distribution, prioritization, and benefits.²⁰ This shows the importance of developing community empowerment in the health sector.⁶

In the Guidelines for Implementing and Fostering Community Empowerment in the Health Sector, community empowerment in the health sector is defined as the process of providing information to individuals, families, or groups continuously and continuously following developments, as well as the process of helping them change from not knowing to knowing or being aware (knowledge aspect), from knowing to willing (attitude aspect), and from being willing to being able to carry out the introduced behavior (action aspect).²¹ Based on this definition, the evaluation showed that PUSAKA Wahyu Teratai has been running according to the existing definition. Under the guidance of YKST Jakarta, the Prenggan community, the caretakers, as well as the elderly participants of PUSAKA Wahyu Teratai have become

aware, willing, and finally able to carry out their guided community health behavior in activities organized by the organization since 2008.

Until now, there is no specific instrument to measure/evaluate how far a community group has reached in their level of empowerment. Darmawan et al. in 2012 developed an initial instrument to assess the level of community empowerment at the community level. This instrument consists of 7 components/ indicators of community potential, which are then translated into several sub-indicators, totaling 35 sub-indicators.²² However, this instrument can only be applied at the community or community level in a health center working area, and has not been used in this study. Instead, the instrument used in this study refers to the health program evaluation instrument that focuses on input, process, output, and outcome.

Evaluation of the personnel input aspect (Table 2) showed that most caretakers have a senior high school education and they have different professional/ experience backgrounds. This program also involved community leaders according to local cultural wisdom in Prenggan. The involvement and cohesiveness of community leaders and health cadres are essential in the community empowerment process.²³ A study of the community empowerment model in the health sector shows that social capital and community participation were found to significantly influence the ability to solve local health problems in the Desa Siaga Program.³

Evaluation of the infrastructure and facilities input aspects (Table 3) showed that PUSAKA Wahyu Teratai has a very complete infrastructure. Not all of the existing infrastructure and facilities belong to the organization, but the caretakers and head of the Prenggan community lend their inventory for the continuity of activities, which should be appreciated. It showed the implementation of the principles of volunteerism, participation, and togetherness. Volunteering involves activities based on self-awareness and motivation to fix and solve existing problems, not coercion. Participatory means participation from decision making, planning and implementing activities, monitoring, and evaluation, to utilizing the results of activities. Togetherness

means the attitude to share feelings, work hand in hand in helping, and develop synergy.²¹

The operational fund evaluation (Table 3) showed there were efforts not to rely solely on operational funding sources from YKST Jakarta. Apart from raising internal funds by profit-sharing from economic empowerment activities, the caretakers also tried to raise funds from outside parties. Concerning funding to date, it has become a challenge to manage how to make the program run sustainably in the future without dependence on outside parties. It follows the autonomy principle, namely the ability to empower people to be independent or break away from dependence owned by each individual, group, or other institutions.²¹

Evaluation of the process aspects (Table 4 and Figure 2) showed that the implementation of PUSAKA Wahyu Teratai activities has been going well. It is especially because of the exceptional personnel, adequate infrastructure, good socialization of activities, high spirit of kinship and cooperation in the community for the activities' implementation, and high awareness of caretakers and participants to make the activity a success. A case study of the family empowerment program (Posdaya) showed that these factors and the length of stay and having vacant land, are supporting factors for program implementation and success.²⁴

Evaluation of the output aspect (Table 5) showed that, in general, participants' participation in the activities held at PUSAKA Wahyu Teratai is relatively high. Compared to the results of previous studies, this participation rate is higher than the participation of the elderly in each activity at CECS in Bambanglipuro District in 2012.¹¹ This level of participation is also higher than the utilization rate of the CECS in the work area of Primary Health Care of Bambanglipuro by the elderly in 2011, namely 73.30%.²⁵

Based on Table 5, participation in activities that require participants' attendance or involve physical activities (health examinations, light sports, local arts activities, spiritual education, and recreation) are not as high as other activities, because of the participants' physical limitations. Concerning physical limitations, the current economic empowerment activities are chosen with a more appropriate forum and form of

livelihood. It follows the principle of empowerment in the elderly who still pay attention to their function, wisdom, knowledge, expertise, skills, experience, age, and physical condition.⁷

Evaluation of the outcome aspect was conducted on the PUSAKA Wahyu Teratai participants' quality of life. Currently, quality of life is an important concept used as one of the criteria for evaluating health service interventions.²⁶ One previous study has shown that active participation in CECS is associated with a good quality of life.¹¹ The quality of life of the elderly is also influenced by the level of physical activity, sociodemographic factors, and health problem factors, such as hypertension, arthritis, chronic disease, and obesity.^{11,26-32}

Table 6 shows that all of the quality of life domains' mean scores are more than 50.00. A study on hypertensive patients in Kalasan, Sleman, Yogyakarta, aged 40-75 years showed the following mean score of quality of life: PF (91.1 ± 14.6), RP (52.5 ± 42.9), BP (58.7 ± 17.8), GH (62.6 ± 9.4), VT (73.1 ± 14.7), SF (75.3 ± 20.7), RE (52.8 ± 42.5), and MH (81.5 ± 14.3).¹⁵ Comparing these results, it appears that the quality of life mean scores of PUSAKA Wahyu Teratai participants are higher in the RP, BP, and RE domains.

The evaluation of these aspects can be used to measure the success of the community empowerment program of PUSAKA Wahyu Teratai. For community empowerment in the health sector to be achieved, synergy and collaboration are needed from four elements: empowerment, empowerment goals, healthy living activities, and community resources.¹ Reviewing the process of establishing and organizing PUSAKA Wahyu Teratai, it appears that good synergy and collaboration have been achieved between the following four elements:

- a. The driving force for empowerment, namely YKST Jakarta, is the initiator, coach, motivator, and facilitator who has sufficient competence and can build commitment with community leaders' support, both formal and informal.
- b. The target of empowerment is the Prenggan community, Sidomulyo, Bambanglipuro, Bantul, which acts as an agent of change for implementing healthy living behaviors (as the subject of health development).

c. Healthy living activities, which are conducted daily by the community to form habits and patterns of life, grow and develop, institutionalize, and culture in social life. In this case, the healthy living activities taught include the seven main activities and some additional activities.

d. Resources, which are Prenggan community potential, YKST Jakarta, and the Sidomulyo Village government, which include: funds, facilities, infrastructure, culture, methods, guidelines, and media that support the implementation of the community empowerment process.

Achieving synergy and collaboration between the four elements is not easy. It requires application of the principles of volunteerism, autonomy, self-reliance, participatory, egalitarian, democratic, openness, togetherness, accountability, and decentralization in their implementation.²¹ Therefore, based on this evaluation, YKST Jakarta as a driving force of empowerment can be an example of properly carrying out this role.

The results of this study are expected to serve as an example for public health practitioners on how to conduct community empowerment programs in the health sector. Other social organizations and other community groups also can adopt activities that are following their conditions. A cross-sector policy is needed to support the continuity and sustainability of community empowerment programs.

This study has some limitations in exploring in more detail the initial process of community empowerment carried out by YKST Jakarta in the Prenggan community. Apart from the limited documents, in-depth interviews were also not conducted. Therefore, further research with a more appropriate design is needed.

5. Conclusions

PUSAKA Wahyu Teratai has a reasonably good input capital, and a fair process of implementing activities, resulting in output in the form of a reasonably high level of participation and outcomes of good quality of life from the participants. It shows that YKST Jakarta, as the driving force of community empowerment in Prenggan, has succeeded in empowering the community. The challenge faced by the PUSAKA

Wahyu Teratai caretakers at the present is how this program will continue to develop and be sustainable in the future without depending on funds from other parties. For this reason, more intensive coaching is needed from both YKST Jakarta, the local government of Sidomulyo, and related parties, to significantly optimize economic empowerment activities as an independent source of funding.

Acknowledgments

This study did not receive specific grants from funding agencies in the public, commercial, or non-profit sectors.

Conflict of interests

The author declared no potential conflict of interest concerning the research, authorship, and or publication of this article.

References

1. Sulaeman E. *Pemberdayaan Masyarakat Di Bidang Kesehatan: Teori Dan Implikasi*. Yogyakarta: Gadjah Mada University Press; 2016.
2. Undang-Undang Republik Indonesia No 36 Tahun 2009 Tentang Kesehatan.
3. Sutisna E, Ravik S, Bhisma K, et al. Model pemberdayaan masyarakat bidang kesehatan, Studi Program Desa Siaga. *J Kesehat Masy Nas*. 2012;7(4):186-192.
4. Restuastuti T, Zahtamal, Chandra F, Restila R. Analisis pemberdayaan masyarakat di bidang kesehatan. *J Kesehat Melayu*. 2017:14-19.
5. Undang-Undang Republik Indonesia Nomor 13 Tahun 1998 Tentang Kesejahteraan Lanjut Usia.
6. Pusat Penanggulangan Krisis Kesehatan Kementerian Kesehatan RI. *Pedoman Pemberdayaan Masyarakat Dalam Penanggulangan Krisis Kesehatan*. Jakarta: Kementerian Kesehatan Republik Indonesia; 2015.
7. Mustika IW. Membangun Kebijakan Kesehatan Lansia Berbasis Kearifan Lokal. *J Skala Husada*. 2016;13(1):1-12.
8. Setiti SG. Pelayanan Lanjut Usia Berbasis Kekerabatan (Studi Kasus Pada Lima Wilayah Di Indonesia). *Puslitbang Kesos RI*. 2007:153-167.
9. Komisi Nasional Lanjut Usia RI. *Pedoman Pelaksanaan Posyandu Lanjut Usia*. Jakarta: Komisi Nasional Lanjut Usia RI; 2010.
10. PUSAKA Wahyu Teratai. *Profil PUSAKA Wahyu Teratai*. Yogyakarta: PUSAKA Wahyu Teratai; 2010.
11. Dewi SK, Kusnanto H, Pramantara IDP, Rahayujati TB. Status partisipasi dan kualitas hidup peserta pos pelayanan terpadu lanjut usia. *Kes Mas J Kesehat Masy*. 2017;11(1):28-40.
12. Irmawan. Pelayanan sosial bagi lanjut usia berbasis masyarakat desa. *J PKS*. 2017;16(4):359-368.
13. Sastroasmoro S, Ismael S. *Dasar-Dasar Metodologi Penelitian Klinis*. Vol 4. Jakarta: CV Sagung Seto; 2011.
14. PERDOSSI. *Panduan Praktik Klinik: Diagnosis Dan Penatalaksanaan Dimensia*. Jakarta: PERDOSSI; 2015. <http://www.perdossi.or.id>.
15. Melani F, Hasrat KT, Widyasti BAC, Suhadi R. Evaluasi kualitas hidup responden hipertensi usia 40–75 tahun menggunakan instrumen SF-36 di kecamatan Kalasan, Sleman, DIY. *J Farm Klin Indones*. 2017;6(3):200-209.
16. Fayers PM, Machin D. *Quality of Life: Assessment, Analysis, and Interpretation*. Vol 7.; 2000. Wiley Online Library.
17. Dahlan MS. *Statistik Untuk Kedokteran Dan Kesehatan: Deskriptif, Bivariat, Dan Multivariat Dilengkapi Aplikasi Menggunakan SPSS*. 6th ed. Jakarta: Salemba Medika; 2014.
18. PUSAKA Wahyu Teratai. *Data Pengurus Dan Peserta PUSAKA Wahyu Teratai Tahun 2019*. Yogyakarta: PUSAKA Wahyu Teratai; 2019.
19. Nadzir M. Membangun Pemberdayaan Ekonomi Di Pesantren. *Econ J Ekon Islam*. 2015;6(1):37-56.
20. Peraturan Presiden Nomor 72 Tahun 2012 tentang Sistem Kesehatan Nasional.
21. Peraturan Menteri Kesehatan Republik Indonesia Nomor 65 Tahun 2013 tentang Pedoman Pelaksanaan dan Pembinaan Pemberdayaan Masyarakat Bidang Kesehatan.
22. Darmawan ES, Junadi P, Bachtiar A, Najib M. Mengukur Tingkat Pemberdayaan Masyarakat dalam Sektor Kesehatan. *J Kesehat Masy Nas*.

- 2012;7(2):91-96.
23. Trisnowati H. Pemberdayaan Masyarakat untuk Pencegahan Faktor Risiko Penyakit Tidak Menular (Studi pada Pedesaan di Yogyakarta). *J MKMI*. 2018;14(1):17-25.
24. Naufal A, Kusumastuti YI. Evaluasi program pos pemberdayaan keluarga (Posdaya): studi kasus Posdaya bina sejahtera di kelurahan Pasirmulya, kecamatan Bogor Barat, Kota Bogor, Jawa Barat). *J Penyul*. 2010;6(2).
25. Ariyani T. Identifikasi Faktor Perilaku Dalam Pemanfaatan Posyandu Lansia Di Puskesmas Bambanglipuro, Kabupaten Bantul, D. I. Yogyakarta. Jakarta: Universitas Indonesia; 2011.
26. Post M. Definitions of quality of life: what has happened and how to move on. *Top Spinal Cord Inj Rehabil*. 2014;20(3):167-180. 27. Dewi SK. Level aktivitas fisik dan kualitas hidup warga lanjut usia. *Media Kesehat Masy Indones*. 2018;14(3):241-250. 28. Motl RW, McAuley E. Physical activity, disability, and quality of life in older adults. *Phys Med Rehabil Clin N Am*. 2010;21(2):299-308.
29. Pernambuco CS, Gao P, Li H. Quality of life, elderly and physical activity. *Health (Irvine Calif)*. 2012;04(02):88-93.
30. Donoghue O, Connell MO, Kenny RA. Walking to wellbeing: physical activity, social participation, and psychological health in Irish adults aged 50 years and older. Dublin; 2016. https://tilda.tcd.ie/publications/reports/pdf/Report_PhysicalActivity.pdf.
31. World Health Organization. Global Recommendations on Physical Activity for Health. Geneva: WHO; 2010.
32. Pucci G, Reis RS, Rech CR, Hallal PC. Quality of life and physical activity among adults: population-based study in Brazilian adults. *Qual Life Res*. 2012;21(9):1537-1543.

Empowering universities through the Health Promoting University program for tackling non-communicable diseases

Supriyati Supriyati,^{1,2*} Riskiyana Sukandhi Putra,³ and Yayi Suryo Prabandari^{1,2}

¹ Department of Health Behavior, Environment and Social Medicine, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

² Center of Health Behavior and Promotion, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

³ Directorate of Health Promotion and Community Empowerment, Directorate General of Public Health, Ministry of Health Republic of Indonesia, Jakarta, Indonesia

SUBMITTED: 01 November 2021 REVISED: 05 Desember 2022 ACCEPTED: 08 Desember 2022

KEYWORDS

Community empowerment
Health promoting university
Non-communicable disease
Capacity building

ABSTRACT Non-communicable diseases are responsible for 71% of the premature deaths worldwide. Unfortunately, 77% of those deaths occurred in the developing countries including Indonesia. In response, universities can provide potentially empowering health promoting programs for tackling the risk factors of non-communicable diseases. This study was aimed to explain the process of how to empower universities for tackling these non-communicable diseases' risk factors through the Health Promoting University (HPU) program. This study was a descriptive study. The population included Indonesian universities that were involved in the HPU development program in 2019-2021 in collaboration with Universitas Gadjah Mada and The Ministry of Health Republic Indonesia. Sample subjects were the total population of 40 universities. Data were collected through unstructured observations, short interviews, and documents. Observations were performed in 25 universities. Meanwhile, unstructured interviews were conducted with 34 respondents. Data were analyzed descriptively. The process of the HPU development and the focus programs were varied. Many factors contributed to the process of the HPU development, such as the HPU development strategies, the university leaders' commitment, networking, social capital, and participants' capacity in the health promotion. According to the HPU development process from 2019-2021, the HPU development strategy performed in 2021 was the most structured and comprehensive. The capacity building, mentoring system, leader commitment, and networking strongly contributed to the success of the HPU development. This study emphasizes the importance of the university leaders' awareness toward health and the potential resources of the university for tackling the risk factors of the non-communicable diseases.

© The Journal 2022. This article is distributed under a [Creative Commons Attribution-ShareAlike 4.0 International license](https://creativecommons.org/licenses/by-sa/4.0/).

1. Introduction

The World Health Organization (WHO) explains that non-communicable diseases (NCDs) are responsible for 71% of the premature deaths worldwide, and 77% of those deaths occurred in low- and middle-income countries.¹ In Indonesia, NCDs have also become the leading causes of death, and responsible for 76% of the total number of deaths. Basically,

NCDs are preventable. The most effective prevention strategies for NCDs involve behavior modifications such as improving healthy diet, physical activities and smoking cessation, and controlling metabolic disorders.² Behavior modification approaches emphasize the importance of modifying social, environmental, and/or cognitive predictors of target behavior.³

Unhealthy diet, physical inactivity, smoking behaviors and metabolic disorders are the major risk factors of the incidence of NCDs, which are closely related to the social determinants of health. Hence, integrating various sectors is essential in the preventing and controlling of NCDs.⁴ The prevention

*Correspondence: supriyati@ugm.ac.id
Department of Health Behavior, Environment, and Social Medicine, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Jl. Farmako, Sekip Utara, Yogyakarta 55281, Indonesia

Table 1. The characteristics of participants.

| Variables | n | (%) |
|----------------------------|----|------|
| Location of the university | | |
| Sumatra island | 4 | 10 |
| Kalimantan island | 3 | 7.5 |
| Sulawesi island | 2 | 5 |
| Nusa Tenggara island | 1 | 2.5 |
| Java island | 30 | 75 |
| Year of HPU initiation | | |
| 2019 | 14 | 35 |
| 2020 | 5 | 12.5 |
| 2021 | 21 | 52.5 |
| University status | | |
| Public | 8 | 20 |
| Private | 32 | 80 |
| Total | 40 | 100 |

and control of NCDs are not solely the responsibility of the health sector. In response to the NCD problem in the south east Asia region, the ASEAN University Network Health Promoting Network (AUN-HPN) recommends universities should be actively involved in the NCD prevention and control by implementing the Health Promoting University (HPU) program.⁵ The HPU promotion can strengthen the role of academic communities as healthy role models by creating a supportive environment for people to choose healthy behavior. It is a multisectoral approach necessitating involvement and mobilization of various sectors and groups in the university's society. There are three main indicators of the healthy universities: (1) system and infrastructures, (2) zero tolerance areas, and (3) health promotion areas. The implementation of the HPU program in the universities will contribute to solving the serious, life-threatening problems of NCDs among university members and the broader community.

In 2022, there are more than 3,000 universities with more than 7,350,000 students and 250,000 lecturers in Indonesia. Those numbers can be potentially empowered for the prevention and control of NCDs in Indonesia. The implementation of the HPU program will increase the university staffs' and students' awareness toward the urgency of NCD prevention and control and improve their capacity to become involved in the NCD prevention programs.⁶ The HPU program will strengthen the role of

university staff and students as the agents of change for creating a better health status in the community. Universitas Gadjah Mada, in collaboration with the Directorate of Health Promotion and Community Empowerment, Ministry of Health Republic Indonesia and selected universities have been developing HPU in Indonesia in 2019-2021. This paper aimed to describe and discuss the process of the HPU development in Indonesia.

2. Methods

This paper was a descriptive study based on the HPU development process in Indonesia, from 2019 to 2021. The HPU is a new program in Indonesia and it is necessary to provide evidence concerning its importance to convince policy makers and other related stakeholders.

The population included universities in Indonesia that were developing HPU programs in 2019-2021, in collaboration with Universitas Gadjah Mada and the Directorate of Health Promotion and Community empowerment, Ministry of Health Republic Indonesia. There were 40 universities involved in the HPU program development, and the sample included the total study population. Data were collected through unstructured observations, short interviews, and documents.

Observations were performed by visiting the universities and monitoring the activities of HPU development. Monitoring used both online and offline methods. In addition, 34 respondents were interviewed by the researcher team. Respondents were the persons in charge of the HPU development, policy makers of the university, health officers, as well as students. Persons in charge of the HPU program were lecturers, while the policy makers of the university were the rector or vice rectors, dean or vice dean, and/or the head of study programs that were involved in the HPU program development in their own university. The short interviews were conducted in person during the monitoring program or conducted online by using WhatsApp. The researchers observed various online activities of HPU development such as training, webinars and other health literacy improvement activities. Besides, the HPU declaration, championship,

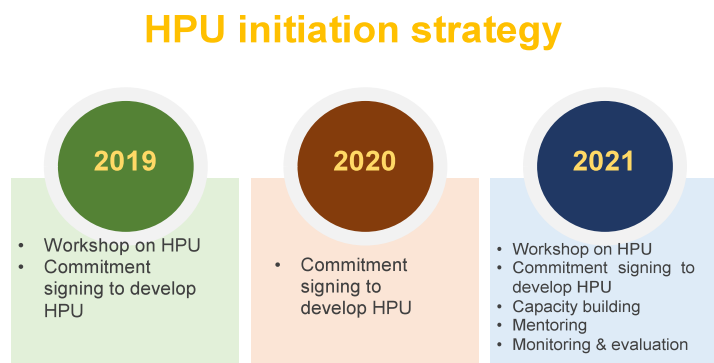


Figure 2. HPU initiation strategy.

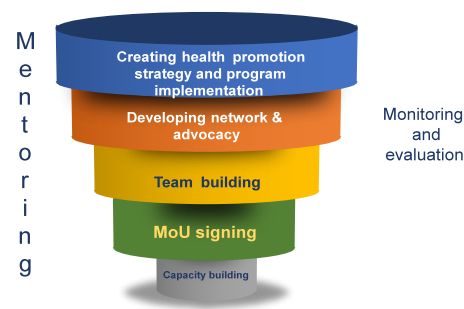


Figure 3. Process of HPU development in Indonesia (2021).

Posbindu (community health screening) and other activities were observed directly. Furthermore, study documentation was done by analyzing the universities' reports concerning the HPU development. Data were analyzed and presented descriptively.

3. Results

The results of this study showed that many universities have been initiating the HPU development. These participants included public and private universities, as shown in Table 1.

Table 1 shows that although HPU was a new program, the locations of the participants are spread out on most of the big islands in Indonesia. In December 2019, 14 universities participated in the HPU initiation program in Yogyakarta, including the State University of Yogyakarta and the Veterans University of National Development Yogyakarta. The HPU development program was held by the Universitas Gadjah Mada in collaboration with Yogyakarta Health Office. A three-day workshop concerning the HPU model program was held to raise participants' awareness of the urgency of HPU development. All workshop participants agreed to implement the HPU program in their campus and signed the commitment sheet as the closing of the workshop.

In 2020, the number of participants was smallest due to the Corona Virus Disease 2019 (COVID-19) pandemic. Remarkably, not all of the universities that

were involved in the HPU development initiation had a health faculty or health study program.

A healthy campus network was developed after the workshop on the HPU approach. Furthermore, the workshop on HPU and the healthy campus network helped universities to develop proactive strategies in response to the COVID-19 pandemic. They were able to share with each other about their experiences and coping mechanisms during the pandemic through a WhatsApp's group.

In November 2020, the workshop participants presented their progress of the HPU development in the 2nd National Seminar on Health Promoting Universities. The seminar applied a blended approach due to the COVID-19 pandemic and participants came from around Indonesia. Besides, they signed a memorandum of understanding (MoU) with the Ministry of Health of Republic Indonesia for the implementation of HPU in their own campus. In addition, there were five universities from Central Java and East Java that were involved in the HPU initiation program by signing the MoU with the Ministry of Health of Republic Indonesia. The agreement of the universities and the Ministry of Health was focused on the strategy to improve health literacy especially for physical activities, healthy diet, mental health, reproductive health, early diagnosis and prompt treatment, safe and healthy environment as well as smoking, drug abuse, and bullying prevention. Each university was able to choose the priority topics according to their own

Table 2. The main components of HPU development among universities.

| HPU development components | Description |
|---------------------------------|--|
| Healthy campus team | The healthy campus team was varied between universities. Most of the universities that were involved in the 2021 mentoring program had a formally healthy campus team with the decree from rector or dean. In contrast, the other universities did not have the formal healthy campus team with the leader decree even though they had person in charge or informal team. |
| Healthy campus programs | All of universities (40) had healthy campus programs such as healthy diet, physical activities, mental health, creating HPU ambassador among students, early diagnosis and prompt treatment through posbindu, smoking prevention, as well as bullying prevention. In addition, most of the universities that were involved in 2021 already declared their own HPU name (i.e. HPU Pinang Masak from University of Jambi, HPU Olah Bebaya from the Muhammadiyah University of Kalimantan Timur), their own emblem, their Instagram account (such as @hpu.unriyo @hpu_unesa @hpu_undana @hpu.ump @hpu.uinsu @hpu_um @hpu_ums @hpu_unimus @hpu.unej @hpu_olahbebaya_umkt @hpu.pinangmasak) as well as their website (i.e. https://hpu.unej.ac.id/ https://hpu.unesa.ac.id/). |
| Leader commitment and support | <ul style="list-style-type: none"> - Regulation and policy to support healthy campus - Budget allocation |
| Networking | <ul style="list-style-type: none"> - The network includes, but not limited to: - Healthy campus network; - Health office in province or district level, as well as primary health center. |
| MOU with the Ministry of Health | All universities (40) signed the MoU with the Ministry of Health to improve health literacy among university society, especially for physical activities, healthy diet, mental health, reproductive health, early diagnosis and prompt treatment, safe and healthy environment as well as smoking, drug abuse, and bullying prevention. |

needs and available resources.

The methods of HPU development were varied from year to year. In 2019, there was a workshop and commitment signing. Unfortunately, due to various reasons, there was only the commitment signing in 2020. In contrast, there was a workshop on HPU, commitment signing, capacity building, mentoring, as well as an evaluation in 2021 (Figure 2).

The communication system during the HPU development was maintained by optimizing the Internet and information technology such as Zoom and WhatsApp. The capacity building and mentoring program on HPU was designed by the HPU team of Universitas Gadjah Mada. The mentoring program was done by empowering five public universities in Indonesia (from Sumatra, West Java, Yogyakarta, East Java, and Kalimantan) as mentors for the 21 universities in 2021. The various approaches of the HPU development from 2019 to 2021 increased the progress of the implementation of healthy campus principles in Indonesia. Previously, most of participants were curious about the HPU program

and wondered if they could apply HPU in their campus, as reflected in the following quotes.

“What is health promoting university? What should we do, and how to start it? We are wondering, whether we are able to conduct this program in our campus. It is a new concept...” (Woman, dean, private university)

“Yes, we are interested in... but how? What should we do? Is there any specific guideline or capacity building program for running the health promoting university? (Man, dean, public university)

“I think that it is a good idea. Unfortunately, we don't know how to carry it out...” (Woman, the head of public health study program, private university)

The 21 universities had chosen purposively to be involved in the HPU development program in 2021. Then, a capacity building strategy was conducted to improve participants' awareness and readiness to apply HPU in their campus. The capacity building increased their self-efficacy and encouraged them to

sign the MoU and apply the HPU program gradually, as shown in Figure 3.

An intensive capacity building and mentoring program lead to a comprehensive action to create a more supportive environment for healthier behavior among the university society. The capacity building ss emphasized the urgency of the needs assessment as the consideration of the health promotion planning. By the end of the program, most of universities had their own emblem of HPU, official Instagram and website for the HPU program, organizational structure with rector/dean decree, declared as health promoting campus, and prioritized programs of healthy campus activities. The rector or dean decree for the HPU team was necessary for the team building process. Each of them had featured programs according to their needs and available resources. Posbindu (health screening system) development, creating health promotion ambassadors at the student level, improving physical activities among the university society, building awareness on the mental health issues, and healthy diet were some of the examples of their priority programs. Most of these received the necessary support and commitment from the university leaders. Indeed, the leaders feel happy and proud that their university had chosen to be participants in the HPU development program, as reflected in the following quotes.

“We are grateful that UGM involved us in this program..., we are proud to be one of the HPU development participants, since not all universities have the similar chance...” (Man, Rector, private university)

“...this is an essential program..., sometimes we forgot that we have to practice healthy behavior until we got sick...” (Man, rector, public university)

“... it is not easy to practice healthy behavior. Health Promoting University can really help us to do it.” (Man, Vice rector, public university)

Leaders’ commitment and support were highly critical for the success of the HPU development. Their support further improved the university team’s self-efficacy to implement the HPU program.

This study showed that basically there were five

main components should be or had been conducted by universities for developing HPU, namely: (1) healthy campus team, (2) healthy campus program, (3) leader commitment and support, (4) networking, and (5) the collaboration and MoU with the Ministry of Health as the additional component. Table 2 describes the components of the HPU development program among 40 universities.

4. Discussion

This study showed that the HPU program development was conducted for tackling NCD risk factors in 2019-2021. The HPU initiation strategies were varied as were the participants’ responses. Every single university developed their own priority programs according to their own needs and available resources. Nevertheless, all participants agreed to sign the MoU with the Ministry of Health of Republic Indonesia to implement the HPU program. The capacity building, mentoring system, leaders’ commitment and support as well as the existing networking strongly encouraged participants to apply HPU strategies in their own campus successfully.

There were 40 universities from Sumatra, Java, Kalimantan, Sulawesi, and Nusa Tenggara Island that participated in this program. Participation is an essential component of empowerment.⁷⁻⁹ Basically, participation represents action or being part of a program. Thus, capacity building is needed to enable people or stakeholders to take action and participate in the program.⁶ The HPU Development program used capacity building as a strategy to enable participants to become actively involved in the program. Capacity building interventions enhance knowledge, skills, self-efficacy, change in practice or policies, behavior change, application and system-level capacity.⁹ Capacity building and community engagement are needed for tackling the NCD risk factors.^{2,10}

The capacity building was developed to improve participants’ knowledge regarding HPU and improve their skills to create a tailormade program by considering their own needs and available resources. Healthy diet, physical activities, developing Posbindu (NCD risk factors screening), creating agents of change, and improving health literacy were the most frequently selected priority programs chosen

by participants. The tailor-made programs increase the community participation.¹¹ Furthermore, some health promotion theoretical frameworks were introduced concerning the capacity building process. The theoretical frameworks help participants to guide the design, implementation, and evaluation of the intervention.¹² In addition, the capacity building that was followed by a mentoring system increased the participants' self-efficacy to conduct the HPU program successfully.¹³

This study showed how the social network has become an essential social capital of the university in the HPU development process. The existing social network allows the universities to access the available resources to support the HPU program development. Social networking is a vital necessity to support the capacity building for sustainable health promotion.^{6,11,14} Available resources will improve community engagement and participation.¹⁵ Besides, the leaders' commitment also contributes to the community participation.^{15,16,17}

The HPU development is essentially a community empowerment program in the university setting. This study highlights the importance of the capacity building as the foundation for the HPU development. Meanwhile, the mentorship program increases participants' self-efficacy to carry out the program continuously. In addition, the leaders' commitment and the existing social networks of the universities were the social capital which could potentially empower the university community for the HPU development. Thus, a major implication of this study is that HPU development should apply the principles of community empowerment strategies, including empowering the existing social capital.

This paper does not measure the effectiveness of the HPU strategy to decrease the NCD risk factors, which was one of the limitations of this study.

5. Conclusions

This study suggests that the HPU program is a strategic approach to empower the Indonesian university society for tackling NCD risk factors. Moreover, capacity building, mentorship programs, with the leaders' commitment and support as well as the existing social network play important roles in

the success of HPU development. The effectiveness of the Health Promoting University strategy for tackling the risk factors of non-communicable diseases remains a challenge for future study.

Acknowledgments

We would like to express our gratitude to the Ministry of Health of Republic Indonesia for the financial support of this study.

Conflict of interests

There is no conflict of interest.

References

1. World Health Organization. Non-Communicable Diseases (NCD). 2021. Available online at: <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>. (accessed August 29th 2022)
2. Budreviciute A, Damiati S, Sabir DK., Onder K., Schuller-Goetzburg P., Plakys G., Katileviciute A., Khoja S., Kodzius R. Management and prevention strategies for non-communicable diseases (NCDs) and their risk factors. *Frontiers in Public Health*. 2020; 8 (574111): 1-11.
3. Araujo-Soares V., Hankonen N., Pesseau J., Rodrigues A., Sniehotta FF. Developing behavior change intervention for self-management in chronic illness: an integrative overview. *European Psychologist*. 2019; 24 (1): 7-25.
4. Marmot M. & Bell R. Social determinants and non-communicable diseases: time for integrated action. *BMJ*. 2019;365: Suppl 1.
5. ASEAN University Network Health Promoting Network. AUN Healthy University Framework. 2nd Ed. 2017. Thailand: Mahidol University.
6. Supriyati, Wicaksana AL., Sundari E., Pangastuti HS., Dewi FST. Why do we need to empower university staffs and students for tackling the non-communicable diseases? *Journal of Community Empowerment for Health*. 2021;4 (2):1-8.
7. Whitehead D, Taket A., & Smith P. Action research in health promotion. *Health Education Journal*. 2003; 62 (5): 5-22.
8. Haldane V., Chuah FLH., Srivastava A., Singh

- SR., Koh., GLH., Seng CK., Legido-Quigley H. Community participation in health services development, implementation, and evaluation: a systematic review of empowerment, health, community, and process outcome. *PLoS ONE*. 2019. 14(5). e0216112.
9. De Corby-Watson K., Mensah G., Bergeron K., Abdi S., Rempel B., Manson H. Effectiveness of capacity building interventions relevant to public health practice: a systematic review. *BMC Public Health*. 2018;18 (684): 1-15.
 10. Klingberg S., Adhikari B., Draper CE., Bosire EN., Tiigah P., Nyirenda B., Mukumbang FC. Engaging Communities in non-communicable disease research and interventions in low-and middle-income countries: a realist review protocol. *BMJ Open*. 2021. 11(7): e050632
 11. Laverack G. 2007. *Health Promotion Practice: Building Empowered Communities*. England: Mc Graw Hill Open University Press.
 12. Walugembe DR., Sibbald S., Le Ber MJ. Kothari A. Sustainability of public health intervention: where are the gaps? *Health Research Policy and Systems*. 2019; 17(8): 1-7.
 13. Choi E & Yu S. Effects of preceptors mentoring function on novice nurse's self-efficacy and organizational commitment: a cross-sectional study. *Nurse Education in Practice*. 2022 64 (103431).
 14. Dietscher C. How can the functioning and effectiveness of networks in the setting approach of health promotion be understood, achieved and researched? *Health Promotion International*. 2017; 32(1): 139-148.
 15. Kusumaningrum MF., Baiquni F., Supriyati S. Community engagement strategy for healthy diet in urban community: a phenomenological study. *BIO Web of Conferences* 2020; 28, 05001.
 16. Aziato L., Majee W., Jooste K., Teti M. Community leaders perspectives on facilitators and inhibitors of health promotion among the youth in rural South Africa. *International Journal of Africa Nursing Sciences*. 2017; 7: 119-125.
 17. Pa Padjaja RN., Iswanto, Supriyati S. Protestant religious leaders' role in supporting reduce-reuse-recycle community practices in Kupang City. *Berita Kedokteran Masyarakat*. 2021; 37(3): 79-84.

Community Collage Service (KKN) student assistance to improve women's health by detecting breast cancer and cervical cancer in Amansari Village, Karawang Regency

Dini Widiati, Rita Komalasari

Department of Public Health, Faculty of Medicine, YARSI Universitas, Jakarta, Indonesia

SUBMITTED: 30 June 2019

REVISED: 06 Desember 2022

ACCEPTED: 13 Desember 2022

KEYWORDS

Community empowerment
Health promoting university
Non-communicable disease
Capacity building
Networking

ABSTRACT Non-communicable diseases are responsible for 71% of the premature deaths worldwide. Unfortunately, 77% of those deaths occurred in the developing countries including Indonesia. In response, universities can provide potentially empowering health promoting programs for tackling the risk factors of non-communicable diseases. This study was aimed to explain the process of how to empower universities for tackling these non-communicable diseases' risk factors through the Health Promoting University (HPU) program. This study was a descriptive study. The population included Indonesian universities that were involved in the HPU development program in 2019-2021 in collaboration with Universitas Gadjah Mada and The Ministry of Health Republic Indonesia. Sample subjects were the total population of 40 universities. Data were collected through observations, unstructured interviews, and documents. Observations were performed in 25 universities. Meanwhile, unstructured interviews were conducted with 34 respondents. Data were analyzed descriptively. The process of the HPU development and the focus programs were varied. Many factors contributed to the process of the HPU development, such as the HPU development strategies, the university leaders' commitment, networking, social capital, and participants' capacity in the health promotion. According to the HPU development process from 2019-2021, the HPU development strategy performed in 2021 was the most structured and comprehensive. The capacity building, mentoring system, leader commitment, and networking strongly contributed to the success of the HPU development. This study emphasizes the importance of the university leaders' awareness toward health and the potential resources of the university for tackling the risk factors of the non-communicable diseases.

© The Journal 2022. This article is distributed under a [Creative Commons Attribution-ShareAlike 4.0 International license](https://creativecommons.org/licenses/by-sa/4.0/).

1. Introduction

Based on data from the Ministry of Health in 2022, the number of new cases for breast cancer account for 65.858 people, while the new case for cervical cancer is 36.633 people.¹ The highest cancer suffered by Indonesian women is breast cancer with an incidence of 26 per 100.000 women, followed by cervical cancer with 16 per 100.000 women, leukemia with 4.342 people (10.4%), lymphoma 3.486 people (8.3%) and lung cancer 3.244 people (7.8%).²

The impact of cancer is enormous which involve not only at individual and family level, but also at

community level. These included the high financial cost of cancer resulted from long-term treatment for cancers.³⁻⁶ A preliminary study from Phase II of ASEAN Costs in Oncology showed that 85 % of patients and families went bankrupt because of the costs of drugs and cancer treatment. Cancer has the potential to make middle and low economic families become poorer.⁷⁻⁹ According to the Jamkesmas (Health Insurance for the Poor) report, it was shown that in 2012 cancer treatment ranked second after hemodialysis, reaching 144.7 billion rupiahs.¹⁰

Although Breast Cancer and Cervical Cancer are the most common cancers in women today, early detection of both types of cancer can be done with inexpensive and simple or simple appropriate

*Correspondence: dini.widiati@yarsi.ac.id
Menara YARSI, Kav. 13, Let. Jend. Suprpto Street. Cempaka Putih, Jakarta Pusat, DKI Jakarta, Indonesia. 10510

technology and improving the quality of treatment by early detection using the Clinical Breast Examine (CBE), better known as BSE for breast cancer, and IVA and Pap smear methods for cervical cancer will accelerate the handling of these two types of cancer, so that the prognosis will be better and the cost of treatment services can also be reduced.^{11,12}

The WHO report states that IVA can detect pre-cancerous lesions (High Grade Precancerous Lesions) with a sensitivity of around 66-96% and a specificity of 64-98%. While Positive Predictive Value and negative Predictive Value are between 10-20% and 92-97% respectively (Wijaya Delia, 2010). IVA is done by dripping acetic acid into the cervix and seeing whether there is a change in mucosal color, if there is a change in mucosal color, the woman is recommended for further examination and referred to the Regional General Hospital (RSUD).⁵

Rengasdengklok sub-district covers an administrative area consisting of 6 villages including, North Rengasdengklok, South Rengasdengklok, Amansari Village, Kemiri Village, Karyasari Village and Kertasari with an overall area of 2.625.924 hectares. Aman Sari Village is included in the Citarum River Stream, based on the village and sub district development checklist and potential village and urban village questionnaires. The number of women in Amansari village is 4,487 with reproductive age of 2.045 people, the highest age at 19 years for 105 people, the number of patients suffering from cancer as many as 2 people in 2018. The participation of citizens and village apparatus such as not maximally moving because there is still a lack of a list of levels of development of villages and urban villages as well as a list of potential villages and villages.

In the context of health care staff shortage in the rural area, the role of cadres in Posyandu is crucial. They consider have close ties with the communities and understand complex sociocultural issues around health in their community. However, education and training for health care staff and cadres in rural area remain limited. In support to health care staff and cadre role in delivering breast and cervical cancer program in rural area, Community Collage Service motivated to assist the program implementation through staff and cadres training for early detection

of breast and cervical cancer and BSE, as well as community cancer screening.

2. Method

The method of implementing the Community College Service (KKN) program in the form of training and assistance carried out for 2 weeks in December 2018, had previously gone through a series of preparations to support the implementation of the KKN work program, with the main material: (a) IVA test examination training; (b) BSE training (Breast Self-Check); (c) giving medical devices for examination; (d) education materials for cadres and women in the form of pocket books and health examinations provided through community home visits and social services; (e) Referral for women suspected of abnormalities at the time of examination.

Researcher invited the Puskesmas workers and Posyandu cadres at the Amansari village. Then the cadres suggested the women who felt sick/ has abnormalities at reproduction organ such as abnormal menstruation period, pelvic pain, fluor albus, or post coital bleeding to join the program. Although it was permitted for other women to participate this program.

Number of respondents was 60 people who attended education program, of those 28 respondents registered for the test but only 20 respondents conducted IVA test examination due to fear of the prosedures. Respondents were given questions pretest before and after education program to measure the respondent's knowledge. Activities carried out at the Amansari village elementary school. The data obtained were analyzed by SPSS version 25 using the Shapiro Wilk normality test, then followed by the Wilcoxon test to see the differences before and after education program.

3. Result

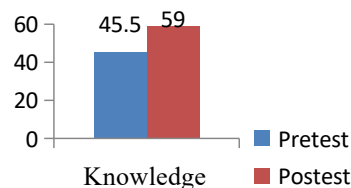
Community service activities that have been carried out and the results achieved will be described as follows:

3.1 Preparation

The initial stages of community service are: (a) making a pocket book module on IVA test and BSE;

Table 1. Respondent structure.

| Number | Activity | Number of participant |
|--------|--------------------------|-----------------------|
| 1 | Community educational | 60 |
| 2 | IVA screening | 20 |
| 3 | Health care Training IVA | 12 |

**Figure 1.** Knowledge level pre and post test.**Figure 2.** (a) Counseling activities at social services. (b) IVA test.

(b) socialization to Amansari village stakeholders regarding education program and social services; (c) procurement of medical devices and equipment. After this preparation, researchers are permitted to do the program, even the village stakeholders are support the program. At this stage the lecturer prepares a student residence, makes modules and prints them, and meets intensively with Amansari village officials to ensure the event can be carried out well.

3.2 Implementation

Students carry out counseling to residents' homes for 2 weeks, by giving pretest and posttest during education program, the implementation of social services is held for 1 day, women who want to do the examination are carried out by cadres, midwives and Yarsi Medical Faculty students. Before IVA examination is given anamnesa, examination of new breasts to the examination table. The midwife who conducts the examination has been given training about the examination and perform the examination under supervision and direction from

the doctor. The number of respondent structure based on the KKN program is shown in Table 1.

Figure 1 shows the change in the level of knowledge after extension. This can be seen with an increase in the percentage of correct answers on the questionnaire after education program was carried out. The average results obtained from the Pre-test audience is 45.50 and Post-test 59.00, increased by 13.5%. This is supported by a significant p value ($p = 0.000$), which indicates that there is a relationship between providing education program and increasing participants' knowledge.

Figure 2 show the activity of educational program, IVA and BSE examinations and health checks conducted by students. The IVA test found 2 people suspected of abnormalities in the cervical area, and 2 people found a lump in the breast of 20 women who did the examination (from total 28 registered respondents) then made a referral to the puskesmas for action.

4. Discussion

Cancer has a devastating impact on individual patient

and family. For the individual patient the impact such as financial difficulties, social interaction problem, depression, and anxiety.^{13,14} For the family, the impact including physical demand, emotional strain, changing roles in the household.¹⁵ A Community Collage Service is one of the efforts to assist the healthcare staff and community in rural location to detect breast and cervical cancer.

In this study, the level of knowledge increase after the education program by 13.5%. This is in line with the previous community service study.¹⁶ The sufficient knowledge of the respondents could help them in self detecting the symptoms of cancer and may also help other community member to raise awareness about cancer.

5. Conclusion

The conclusion of this KKN program is the increasing community knowledge about cervical and breast cancer, and the importance of routine reproductive health checks in the absen of clinical symptoms. IVA test and SADARI training and mentoring help health workers and students about early detection and KKN students are required to be able to live in a community and understand the reality of society by using the knowledge, attitudes and skills. Hopefully the programs that have been implemented during KKN can improve programs that have not been able to be realized properly in the hope of reducing the number of sickness and improving the quality of life of the Amansari village community.

Acknowledgement

We would like to thank Yarsi University as the funder, Public health departement medical of faculty, Amansari village apparatus especially the head of the Puskesmas, the head of District and the head of sub-district, cadres, village midwives and the community who have participated in the KKN implementation.

Conflict of interests

The researcher has received institutional grant support through University YARSI. Another author reports no potential conflicts.

References

1. Ministry of Health Republic Indonesia (MoH). Kanker Payudara Paling Banyak di Indonesia. Jakarta: Ministry of Health Republic Indonesia [Internet]; [cited 05 Desember 2022]. Available from: <https://kemkes.go.id/article/view/22020400002/kanker-payudara-paling-banyak-di-indonesia-kemenkes-targetkan-pemerataan-layanan-kesehatan.html>
2. Infodatin Kemenkes RI. 2016. Kanker Payudara. [cited 21 Februari 2019]. Available from: www.depkes.go.id
3. Alzehr A, Hulme C, Spencer A, Morgan-Trimmer S. The economic impact of cancer diagnosis to individuals and their families: a systematic review. *Support Care Cancer*. 2022; 30(8):6385-6404.
4. Leach CR, Vereen RN, Rao AV, Ross K, Diefenbach MA. Impact of individual- and area-level race/ethnicity on illness intrusiveness among cancer survivors. *Transl Behav Med*. 2019; 25; 9(6):1208-1215.
5. Michel G, François C, Harju E, Dehler S, Roser K. The long-term impact of cancer: Evaluating psychological distress in adolescent and young adult cancer survivors in Switzerland. *Psychooncology*. 2019; 28(3):577-585.
6. Kimman M, Jan S, Kingston D, Monaghan H, Sokha E, Thabrany H, Bounxouei B, Bhoo-Pathy N, Khin M, Cristal-Luna G, Khuhaprema T, Hung NC, Woodward M. Socioeconomic impact of cancer in member countries of the Association of Southeast Asian Nations (ASEAN): the ACTION study protocol. *Asian Pac J Cancer Prev*. 2012; 13(2):421-5.
7. Xiao R, Wu J, Ward BB, et al. Family history of cancer is associated with poorer prognosis in oral squamous cell carcinoma. *Oral Dis*. 2022;10.1111/odi.14253.
8. Miedema B, Easley J, Fortin P, Hamilton R, Mathews M. The economic impact on families when a child is diagnosed with cancer. *Curr Oncol*. 2008;15(4):173-8.
9. Bona K, Dussel V, Orellana L, Kang T, Geyer R, Feudtner C, et al. Economic impact of advanced pediatric cancer on families. *J Pain Symptom*

- Manage. 2014;47(3):594-603.
10. Ministry of Health Republic Indonesia (MoH). Panduan Penatalaksanaan Kanker Payudara. 2015. cited 21 Februari 2019. Available from: <http://kanker.kemkes.go.id/guidelines/PPKPayudara.pdf>
 11. Ngan TT, Nguyen NTQ, Van Minh H, Donnelly M, O'Neill C. Effectiveness of clinical breast examination as a 'stand-alone' screening modality: an overview of systematic reviews. *BMC Cancer*. 2020;20(1):1070.
 12. Putri. Gambaran Perilaku Pemeriksaan Payudara Sendiri (SADARI) Pada Mahasiswi Fakultas Kedokteran dan Ilmu Kesehatan UIN Syarif Hidayatullah Jakarta Tahun 2015. Fakultas Kedokteran dan Ilmu Kesehatan UIN Syarif Hidayatullah. Jakarta.2015.
 13. Oetami. Analisa Dampak Psikologis Pengobatan Kanker Payudara di RS. Dr. Wahidin Sudirohusodo Kota Makasar. 2014.
 14. Singer S. Psychosocial Impact of Cancer. *Recent Results Cancer Res*. 2018; 210:1-11.
 15. Lewis FM. The impact of cancer on the family: A critical analysis of the research literature. *Patient Education and Counseling*. 1986. 8(3): 269-289.
 16. Safe'i, R. Pelatihan pembibitan di KWTH Kartini dalam menunjang keberlanjutan hutan rakyat pola agroforestri. *Jurnal Pengabdian Kepada Masyarakat Tabikpun*. 2021a; 2(3), 223–232.