



EFFECTIVENESS OF STAGE-OF-CHANGE–BASED HEALTH EDUCATION IN ENHANCING COMMUNITY CAPACITY TO PREVENT FILARIASIS

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ABSTRACT

Filariasis is a chronic infectious disease that can cause permanent disability and remains endemic in several regions of Indonesia, including Pidie District. Low public awareness and inadequate preventive practices hinder elimination efforts, underscoring the importance of effective health education. This study evaluate the effectiveness of health education based on the Stage-of-Change model in improving community capacity for filariasis prevention. A quasi-experimental pretest–posttest control group design was conducted with 100 respondents selected through purposive sampling. The intervention group (Delima Public Health Center area) received Stage-of-Change–based health education, while the control group (Padang Tiji Public Health Center area) received no specific intervention. Data on knowledge, attitudes, and preventive behaviors were collected using questionnaires with strong psychometric properties (Content Validity Index = 0.92; Cronbach’s Alpha = 0.87). Data were analyzed using univariate and bivariate techniques, with the Wilcoxon signed-rank test applied at $\alpha \leq 0.05$. Results showed significant progress in the intervention group, with participants advancing from precontemplation to preparation and action stages, accompanied by a marked increase in prevention capacity ($p = 0.000$, $p < 0.05$). In contrast, no significant change occurred in the control group ($p = 0.342$, $p > 0.05$). These findings confirm that SOC-based health education is more effective than conventional approaches and should be integrated into public health programs to strengthen community-based filariasis prevention.

Keywords: community; filariasis; health education; prevention; stage of change

How to cite (in APA style)

Rakhmayana, A. S., Andriani, S., & Mufida, N. (2025). Effectiveness of Stage-of-Change–Based Health Education in Enhancing Community Capacity to Prevent Filariasis. *Indonesian Journal of Global Health Research*, 8(1), 231–238. <https://doi.org/10.37287/ijghr.v8i1.377>.

INTRODUCTION

Filariasis, commonly known as elephantiasis, is a chronic infectious zoonotic disease widely distributed across tropical regions. It is endemic in Asia, Africa, Central, and South America, with approximately 120 million people infected globally (Arsin, 2016). In Indonesia, filariasis continues to be a major public health concern. The World Health Organization (WHO) estimates that more than 120 million people worldwide are affected by filariasis, of which nearly 40 million suffer from permanent disability (WHO, 2023). Nationally, the prevalence of filariasis in Indonesia reached 1.5% in 2023, with Aceh Province recording a prevalence rate of 2.1%, placing it among the top five provinces with the highest number of chronic cases (Nirwan, 2018; Regina et al., 2024). Several districts in Aceh, including Aceh Utara, Aceh Barat, Aceh Tamiang, Nagan Raya, and Pidie, remain highly vulnerable to filariasis transmission. A Transmission Assessment Survey (TAS) conducted in Pidie District reported 10 positive microfilaria cases out of 317 blood samples examined (Ramadhan et al., 2020). Furthermore, *Aedes vexans* has been identified as a potential vector in the region, with its biting activity peaking between 20:00 and 21:00 hours (Yulidar, 2019).

To address the burden of filariasis, the Indonesian government has implemented a Mass Drug Administration (MDA) program, also known as *Pemberian Obat Pencegahan Massal (POMP)*. Despite these efforts, the effectiveness of the program has been hindered by low community

participation. Research indicates that while community attitudes toward prevention and treatment are generally positive, participation in MDA remains limited (Ramadhan et al., 2020). This suggests that knowledge, attitudes, and preventive behaviors are decisive factors in the success of elimination strategies (Kemenkes RI, 2016; Widawati et al., 2022). The lack of sustained behavior change is one of the key challenges in reducing filariasis prevalence in Indonesia (Siwiendrayanti et al., 2019).

Community nurses play an important role in supporting filariasis elimination programs. Through educational and collaborative approaches, they help shift community members from a state of unawareness to awareness, action, and eventually consistent prevention behaviors (Karki et al., 2018). One promising framework that has been shown to facilitate behavior change more effectively is the Stage of Change approach, which is part of the Transtheoretical Model (Siddharthan et al., 2021). This model divides the process of behavior change into five stages: pre-contemplation, contemplation, preparation, action, and maintenance (Agustiantiningsih, 2013; Notoadmodjo, 2012). By tailoring interventions according to an individual's readiness to change, health education can be delivered more effectively and sustainably.

Previous studies in Indonesia have primarily focused on mass education strategies such as community campaigns or the distribution of leaflets. For instance, Lestari et al., (2021) examined the effectiveness of distributing leaflets, and while significant improvements in knowledge were observed, preventive practices remained low due to the lack of continuous follow-up and the failure to address psychological readiness. This highlights the limitations of conventional health education methods, which often adopt a "one-size-fits-all" approach. In contrast, the Stage of Change model allows for a more personalized and adaptive intervention strategy, aligning educational efforts with the unique behavioral stage of each individual.

Adapting the Stage of Change framework to filariasis prevention offers several advantages. First, it recognizes that individuals progress through behavior change at different paces and require tailored interventions. Second, it facilitates the design of structured and sequential educational programs that are responsive to community needs. Third, it promotes sustainability by encouraging long-term behavioral maintenance rather than temporary changes. Integrating this model into community-based health education can therefore strengthen the impact of filariasis prevention programs, particularly in endemic regions such as Aceh.

This study aims to analyze community behaviors related to filariasis prevention and to identify the stages of behavior change before and after Stage-of-Change-based health education interventions. By employing a tailored approach, the study seeks to provide empirical evidence on the effectiveness of structured, theory-driven health education strategies in improving preventive capacity at the community level. The findings are expected to contribute to the development of more effective, context-specific, and sustainable approaches to filariasis elimination in Indonesia.

METHOD

This study employed a quasi-experimental design using a pretest–posttest with a control group to evaluate the effectiveness of stage-of-change-based health education on community capacity to prevent filariasis. The research was conducted in endemic areas of Pidie District, Aceh, Indonesia, with Delima Health Center as the intervention site and Padang Tiji Health Center as the control site. Respondents were selected using purposive sampling according to inclusion criteria: (1) residing in the working area of Delima or Padang Tiji Health Centers, (2) willingness to participate and provide informed consent, (3) ability to read and write, and (4) absence of diagnosed mental disorders. Data were collected using two questionnaires: one assessing the five stages of behavior change adopted from Transtheoretical Model by Prochaska & DiClemente (Siddharthan et al., 2021) and another measuring filariasis prevention ability (20 items). The prevention questionnaire had undergone

psychometric testing, showing strong content validity with a Content Validity Index (CVI) of 0.92 and high reliability with a Cronbach's Alpha of 0.87. After obtaining ethical approval and permissions, participants completed a pretest measuring behavioral stage, knowledge, attitudes, and practices. The intervention group received stage-of-change-based education and guidance for four weeks, while the control group received routine health education. A posttest was then administered to both groups. Data analysis included univariate and bivariate techniques, with the Wilcoxon signed-rank test applied to compare pretest and posttest scores between groups, using a significance level of $\alpha \leq 0.05$.

RESULT

Characteristics of Respondents

The characteristics of respondents are presented in Table 1. Both groups were relatively comparable in terms of age, gender, education, and occupation, indicating that baseline differences were minimal and not likely to bias the outcomes. This balance strengthened the validity of the subsequent intervention analysis.

Table 1.
Characteristic of Respondents

Characteristic	Category	Intervention Group (n=50)	Control Group (n=50)
Age	Adult (20–49)	35 (70.0%)	33 (66.0%)
	Elderly (>50)	15 (30.0%)	17 (34.0%)
Gender	Male	22 (44.0%)	24 (48.0%)
	Female	28 (56.0%)	26 (52.0%)
Education	No Schooling	2 (4.0%)	3 (6.0%)
	Elementary School	10 (20.0%)	11 (22.0%)
	Junior High School	12 (24.0%)	13 (26.0%)
	Senior High School	18 (36.0%)	17 (34.0%)
	Higher Education	8 (16.0%)	6 (12.0%)
Occupation	Unemployed	5 (10.0%)	6 (12.0%)
	Employee	8 (16.0%)	7 (14.0%)
	Entrepreneur	12 (24.0%)	11 (22.0%)
	Farmer	15 (30.0%)	14 (28.0%)
	Laborer	10 (20.0%)	12 (24.0%)

Stages of Change in Filariasis Prevention

Analysis of behavioral change stages showed a significant shift among respondents in the intervention group (Table 2). Prior to the intervention, most were in the precontemplation stage

(64.0%). Following stage-of-change–based education, the majority transitioned to the action (52.0%) and preparation stages (32.0%). This indicates a substantial progression from lack of awareness toward readiness and engagement in preventive behaviors. Although no respondents reached the maintenance stage, the considerable shift to action highlights the effectiveness of the intervention.

Table 2.
Frequency Distribution of Stages of Change in the Intervention Group (n = 100)

Stage of Change (SOC)	Pretest		Posttest	
	F	%	F	%
Precontemplation	32	64,0	0	0,0
Contemplation	10	20,0	8	16,0
Preparation	8	16,0	16	32,0
Action	0	0,0	26	52,0
Maintenance	0	0,0	0	0,0
Total	50	100	50	100

Source: Primary Data (Processed, 2025)

In contrast, the control group demonstrated only modest changes (Table 3). At baseline, most respondents were also in the precontemplation stage (58.0%). After conventional health education, some shifted to contemplation (38.0%) and preparation (22.0%), with only a small proportion reaching the action stage (14.0%). These findings suggest that routine health education was less effective than the stage-of-change–based approach in promoting behavioral progression.

Table 3.
Frequency Distribution of Stages of Change in the Control Group (n = 100)

Stage of Change (SOC)	Pretest		Posttest	
	F	P	F	P
Precontemplation	29	58,0	13	26,0
Contemplation	14	28,0	19	38,0
Preparation	7	14,0	11	22,0
Action	0	0,0	7	14,0
Maintenance	0	0,0	0	0,0
Total	50	100	50	100

Source: Primary Data (Processed, 2025)

Community Ability to Prevent Filariasis

In the intervention group, a marked improvement was observed in respondents' preventive capacity (Table 4). The proportion of participants with good ability increased significantly from 16.0% at pretest to 60.0% at posttest, while those in the poor category decreased from 40.0% to 10.0%.

Table 4.
Frequency Distribution of Filariasis Prevention Ability in the Intervention Group (n = 100)

Category	Pretest	Posttest
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Category	Pretest	Posttest
Poor	20 (40.0%)	5 (10.0%)
Fair	22 (44.0%)	15 (30.0%)
Good	8 (16.0%)	30 (60.0%)
Total	50 (100%)	50 (100%)

Source: Primary Data (Processed, 2025)

Meanwhile, the control group exhibited only minor improvements (Table 5), with respondents in the good category increasing slightly from 18.0% to 22.0%, and poor ability decreasing from 36.0% to 30.0%.

Table 5.
Frequency Distribution of Filariasis Prevention Ability in the Control Group (n = 100)

Category	Pretest	Posttest
Poor	18 (36.0%)	15 (30.0%)
Fair	23 (46.0%)	24 (48.0%)
Good	9 (18.0%)	11 (22.0%)
Total	50 (100%)	50 (100%)

Source: Primary Data (Processed, 2025)

Statistical Analysis

Normality testing confirmed that data were not normally distributed, therefore non-parametric tests were applied (Table 6).

Table 6.
Normality Test

Groups	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest of Intervention Group	.198	50	.000	.885	50	.000
Posttest of Intervention Group	.189	50	.000	.891	50	.000
Pretest of Control Group	.205	50	.000	.883	50	.000
Posttest of Control Group	.226	50	.000	.870	50	.000

Source: Primary Data (Processed, 2025)

Results of the Wilcoxon Signed-Rank Test (Table 7) revealed a statistically significant improvement in the intervention group ($p < 0.001$), while no significant difference was observed in the control group ($p > 0.05$).

Table 7.

Community Ability to Prevent Filariasis Before and After Health Education Based on the Stages of Change (Wilcoxon Signed-Rank Test)

Group	N	Positive Rank	Ties	Negative Ranks	Sig(2-tailed)
Intervention	50	43	7	0	0,000
Control	50	6	41	3	0,342

These findings provide strong evidence that stage-of-change-based education is effective in improving preventive capacity against filariasis at the community level.

DISCUSSION

The findings of this study demonstrate that the Stages of Change (SOC)-based intervention was effective in promoting behavioral change toward filariasis prevention in the community. In the intervention group, most respondents who were initially in the precontemplation stage showed a significant shift to the action and preparation stages. This indicates that health education not only raised awareness but also motivated individuals to take concrete preventive measures. In contrast, the control group experienced slower and more limited progress, with the majority moving only to the contemplation and preparation stages and only a few reaching the action stage. This difference was further confirmed by the Wilcoxon test results, which showed a significant effect in the intervention group ($p < 0.05$), while no significant change was observed in the control group ($p > 0.05$). These findings are consistent with the Transtheoretical Model (Prochaska & DiClemente, 1992), which emphasizes that behavior change is a gradual process, and they are supported by previous studies (Hasibuan et al., 2024; Syafir & Saleh, 2025; Syafriani & Mulidan, 2022; Yaumil & Thaifur, 2024) highlighting the effectiveness of theory-based interventions in accelerating the transition from passive to active stages. According to the researchers, the success of the intervention lies in its alignment with the psychological conditions and motivations of the community, as the SOC approach enables individuals to recognize their position within the stages of behavior change and motivates them to progress to higher levels. Therefore, SOC-based health education is recommended as a key strategy in public health programs, particularly in the prevention of filariasis and other infectious diseases, as it not only enhances knowledge but also stimulates more tangible and sustainable behavioral changes.

CONCLUSION

This study demonstrated that health education based on the Stages of Change (SOC) model significantly improved community capacity for filariasis prevention, with the intervention group showing meaningful progress from precontemplation to preparation and action stages, unlike the control group. The findings confirm that SOC-based interventions are more effective than conventional methods in promoting sustainable behavioral change. Therefore, integrating SOC-based education into public health programs, supported by continuous health worker engagement and long-term evaluation, is essential for the success of filariasis prevention initiatives.

ACKNOWLEDGMENT

The authors would like to thank all community participants and local health workers who contributed to the success of this study through their active participation and support during data collection. This research was funded by the Directorate General of Research and Development, Ministry of Higher Education, Science and Technology, under the 2025 Fiscal Year Research and Community Service Program Grant. The authors gratefully acknowledge this financial support.

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