

The Effect of Emotional Support, Education, and Age on Healthy and Clean-Living Behavior Among Health Workers in Karanganyar

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Received: 04/12/2025

Accepted: 02/02/2026

Published: 12/10/2026

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ABSTRACT

Introduction: This study aims to analyze the relationship between emotional support, education level, and age with clean and healthy living behaviors (PHBS) among health workers in Karanganyar Regency.

Methods: This cross-sectional quantitative study examined the association between age, education, and clean and healthy living behavior (PHBS) among 178 health workers in Karanganyar selected through simple random sampling. Data were analyzed using chi-square tests and multivariate logistic regression in Stata 17.0, with results reported as odds ratios (OR) at $p < 0.05$. Ethical approval was obtained from the Health Research Ethics Commission of Dr. Moewardi General Hospital

Results: The Chi-square test results showed a significant relationship between age and PHBS ($p=0.010$) and education and PHBS ($p<0.001$). Younger respondents (< 60 years) tended to be more compliant with PHBS than respondents aged ≥ 60 years, while health workers with higher education (university) were more consistent in implementing PHBS than those with elementary to high school education. Logistic regression analysis reinforced these findings, with results showing that education ($OR=0.148$, $p<0.001$) and age ($OR=0.269$, $p=0.022$) had a significant effect on PHBS. Conversely, emotional support was not found to have an effect on PHBS ($p=0.666$), in line with the results of the bivariate analysis.

Conclusion: In conclusion, age and educational level were found to significantly influence clean and healthy living behaviors among health workers, whereas emotional support had no significant effect on PHBS. These findings suggest that PHBS-based health promotion programs should be tailored to the demographic characteristics of health workers to improve their effectiveness and sustainability.

Keywords: Clean Living Behavior; Emotional Support; Health Workers

INTRODUCTION

PHBS (Clean and Healthy Living Behavior) is the main foundation in efforts to maintain individual and community health holistically. The importance of PHBS is not only limited to the prevention of infectious diseases, but also plays a crucial role in improving quality of life and creating an environment conducive to health. By adopting PHBS habits, such as regular hand washing, proper waste management, and maintaining environmental hygiene, the risk of spreading diseases such as diarrhea and respiratory tract infections can be significantly minimized^{1,2,3}. Moreover, PHBS also contributes to the formation of a sustainable clean living culture through education, health promotion, and active community participation, which ultimately encourages independence in maintaining health^{4,5}.

The implementation of PHBS has been proven effective in improving knowledge and healthy behaviors, especially among school children, which then has a positive impact on overall public health^{6,7}. For vulnerable groups such as the elderly, PHBS becomes even more vital as it helps them maintain their independence and quality of life in their twilight years⁸. Therefore, educational efforts and the integration of PHBS into various aspects of life, including school curricula and family support, are highly recommended to ensure that these behaviors become ingrained daily habits. PHBS, thus, is a promotive and preventive public health strategy that has a broad and sustainable impact^{9,10}.

Health workers, as the frontline of health services, have a central role in promoting and implementing PHBS. They are not only role models for the community, but also agents of change who directly interact with individuals and communities to educate and motivate the adoption of healthy behaviors. Therefore, the level of compliance of health workers with PHBS is an important indicator of the success of public health programs^{11,12}.

Various factors can influence PHBS behavior, including internal factors such as knowledge and attitude, as well as external factors such as family support and availability of infrastructure. Previous studies have shown that demographic factors such as age and education can influence the adoption of health behaviors^{13,14}. For example, a study by Febryani and Susilo (2021) highlighted the relationship between knowledge, age, education level, and household income with PHBS at the household level¹⁵. Research by Phalis et al. (2025) also discusses the influence of health education on PHBS on community behavior¹⁶. These findings indicate that age and education can be important predictors of PHBS behavior, especially among health workers.

However, there is still a gap in the availability of local data regarding demographic factors influencing PHBS among health workers in Karanganyar. Limited evidence makes it difficult to design interventions that truly match local conditions and needs. This study offers novelty as the first research in Karanganyar to apply a multivariate analysis to examine PHBS determinants among health workers. The aim of this study is to analyze the influence of emotional support, age, and educational level on clean and healthy living behaviors (PHBS) among health workers in Karanganyar, in order to provide practical and evidence-based recommendations for improving future health promotion programs.

METHOD

This study used a quantitative design with a *cross-sectional* approach to analyze the relationship between the independent variables of age and education and the dependent variable of clean and healthy living behaviors (PHBS) among health workers in Karanganyar in a single measurement period. The study population comprised all health workers in Karanganyar, totaling approximately 3,200 individuals. The minimum sample size was determined using the Slovin formula to ensure representativeness while considering feasibility. With a final sample of 178 respondents selected through simple random sampling, the estimated margin of error was approximately 7.3%, which is acceptable for cross-sectional studies in public health and social research. The inclusion criteria were health workers who were employed full-time in health service facilities in Karanganyar and were willing to participate by providing informed consent and completing the questionnaire in full. Health workers who were on long-term leave or did not complete the questionnaire were excluded from the study.

Data were collected using instruments relevant to measuring each variable, with age categories divided into < 60 years and ≥ 60 years, education divided into elementary school–high school and college, while PHBS and emotional support were each categorized into two groups, namely not practicing/low and practicing/high. Data on PHBS and emotional support were collected using structured questionnaires that had undergone content validation by public health experts. The reliability analysis demonstrated satisfactory internal consistency across all measured variables, with Cronbach's

alpha coefficients of 0.82 for the PHBS scale and 0.79 for the emotional support scale, confirming acceptable reliability. Data analysis was performed using Stata software version 17.0 MP Parallel Edition, employing *chi-square* tests to assess bivariate relationships between categorical variables and logistic regression to test the simultaneous and partial effects of independent variables on PHBS. The results of the logistic regression were presented in the form of odds ratios (OR), with significance set at $p < 0.05$, and supplemented with information on log likelihood and Pseudo R² to assess model fit. This study has been granted an ethical clearance certificate by the Health Research Ethics Commission at Dr. Moewardi General Hospital, under the number 483/III/HREC/2023. All respondents were informed about the study objectives, confidentiality of data, and their right to withdraw at any time without consequences prior to participation.

RESULT

The demographic characteristics of the respondents are presented in Table 1. A total of 178 participants were included in this study, with males comprising the larger proportion of the sample. Most respondents were in the middle-age group, particularly those aged 46–60 years, followed by individuals aged 31–45 years. The majority of participants were married. In terms of educational background, higher education or university level was the most common, followed by senior high school and diploma-level education, while only a small proportion of respondents had lower levels of education.

Table 1. Characteristics of the study respondents (n = 178)

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	107	60.1
	Female	71	39.9
Age Group	≤ 30 years old	11	6.2
	31 – 45 years old	71	39.9
	46 – 60 years old	82	46.1
	> 60 years old	14	7.9
Marital Status	Married	168	94.4
	Divorced/Widowed	4	2.2
	Single/Unmarried	6	3.4
Education Level	Elementary School	2	1.1
	Junior High School	8	4.5
	Senior High School	61	34.3
	Diploma (D1/D3/D4)	32	18.0
	Higher Education/University	75	42.1
Total		178	100.0

This study involved 178 health workers in Karanganyar with the aim of analyzing the relationship between age, education, and emotional support on clean and healthy living behaviors (PHBS). The analysis was conducted using the *chi-square* test to examine bivariate relationships, as well as multivariate logistic regression to assess the simultaneous influence of these variables. The results of the analysis are shown in Tables 2 and 3 below.

Table 2. Results of bivariate analysis of each independent variable on the dependent variable

Variable	χ^2 (Chi-square)	p-value	Description
Age	6.6939	0.01	Significant
Education	18.0376	<0.001	Significant
Emotional Support	0.3788	0.538	Not significant

The analysis results show that there is a significant relationship between age and PHBS (Pearson $\chi^2(1) = 6.6939$, $p = 0.010$). Of the 178 respondents, the majority were in the < 60 age group (157 respondents), and most of them (138 respondents) practiced PHBS. Meanwhile, in the ≥ 60 years age group, only 14 of 21 respondents practiced PHBS. These findings indicate that younger health workers tend to have higher compliance in practicing PHBS compared to those who are older.

In addition, the level of education also showed a very significant relationship with PHBS (Pearson $\chi^2(1) = 18.0376$, $p = <0.001$). Of the total respondents, 108 had elementary to high school education and 70 had college education. The distribution results show that respondents with college education practiced PHBS more than respondents with lower education. This confirms that education level plays an important role in shaping the health behavior of medical personnel. However, the *Chi-square* test did not find a significant relationship between emotional support and PHBS (Pearson $\chi^2(1) = 0.3788$, $p = 0.538$). This indicates that in the context of this study, emotional support is not a factor that influences PHBS practices among health workers.

Table 3. Results of multivariate analysis with logistic testing

Variable	Odds Ratio (OR)	Std. Err.	z	p-value	95% CI (Lower–Upper)
Emotional Support	0.7898	0.4317	-0.43	0.666	0.2705 – 2.3055
Education	0.1484	0.0751	-3.77	<0.001	0.0551 – 0.4000
Age	0.2697	0.1544	-2.29	0.022	0.0878 – 0.8284
Constant	25.2043	15.5462	5.23	<0.001	7.5240 – 84.4309

Multivariate logistic regression analysis shows that the overall model is significant ($LR \chi^2(3) = 22.90$, $Prob > \chi^2 = 0.0000$) with a *Pseudo R2* value of 0.1547. The education variable has the strongest influence on PHBS (OR = 0.148, $p = <0.001$), which means that health workers with higher education are more likely to implement PHBS than those with lower education. The age variable is also significant (OR = 0.269, $p = 0.022$), indicating that younger health workers are more likely to implement PHBS. Conversely, emotional support (OR = 0.789, $p = 0.666$) remained insignificant, consistent with the results of the bivariate analysis.

DISCUSSION

The results of this study consistently show that age and education level are significant factors influencing clean and healthy living behaviors (PHBS) among health workers in Karanganyar. These findings are in line with several previous studies indicating the important role of demographic factors in the adoption of health behaviors^{13,14}.

The significant relationship between age and PHBS shows that younger health workers tend to have better PHBS compliance. This may be due to several factors. The younger generation may be more exposed to health information through various media, including digital media, and be more adaptive to changes and innovations in health practices. In addition, they may also have higher energy and mobility levels, which support consistent implementation of PHBS. A study by Febryani and Susilo (2021) also highlights how age can influence the acceptance and application of health education¹⁵.

The level of education has also been proven to be a very strong predictor of PHBS. Health workers with higher education (university) show a much better level of PHBS implementation compared to those with elementary to high school education¹⁷. This can be explained by the fact that higher education is often correlated with increased knowledge, a better understanding of health concepts, and the ability to process complex information. Individuals with higher education tend to have better health literacy, which enables them to understand the importance of PHBS and integrate it into

their daily practices^{18,19}. This confirms that investing in the education of health workers not only improves their clinical competence but also promotes better personal health behaviors.

Interestingly, emotional support did not show a significant relationship with PHBS in this study. These results differ from some literature that shows that social support, including family support, can influence compliance with PHBS. This difference may be due to the characteristics of the study sample, which consisted of health workers. As health professionals, they may have strong internal motivation and a deep understanding of the importance of PHBS, so that external emotional support may not be a major driving factor. Additionally, the definition and measurement of emotional support in this study may not fully capture the complex nuances of social support that influence health behavior²⁰. However, it is important to note that even though it is not statistically significant in this model, social support remains an important component in health promotion in general.

Social support is essentially formed from the environment, but the living environment is only a supporting factor for healthy lifestyles²¹. Education greatly influences habits and is supported by the surrounding environment to create clean living habits²². Health workers not only motivate themselves, but also motivate the community. However, several studies show that the role of health workers is still moderate²³. Public commitment greatly influences healthy living behaviors, which are supported by the participation of all individuals as well as several other factors such as age, education level, and government facilities^{24,25}.

Overall, these findings underscore the importance of considering age and education factors in designing effective PHBS intervention programs for health workers. Health education and promotion programs can be tailored to target specific age groups and education levels, ensuring that messages are conveyed in the most relevant and impactful way. For example, for older healthcare workers or those with lower levels of education, a more personal and practical approach may be more effective, while for younger and more highly educated workers, evidence-based information and interactive discussions may be preferred. Thus, PHBS improvement efforts can be more focused and efficient, contributing to the improved health of healthcare workers and, in turn, the communities they serve.

CONCLUSION

This study shows that age and education level have a statistically significant relationship with clean and healthy living behaviors (PHBS) among healthcare workers in Karanganyar. Younger and more highly educated healthcare workers tend to have better PHBS compliance. Emotional support did not show a significant relationship with PHBS in this study.

It is recommended that PHBS promotion programs be tailored to the demographic characteristics of health workers for greater effectiveness. A more personalized and practical approach may be more effective for older health workers or those with lower levels of education, while evidence-based information and interactive discussions may be preferred for younger and more highly educated workers. Further research could explore other factors that influence PHBS among healthcare workers and develop more comprehensive interventions.

ACKNOWLEDGEMENT

The authors wish to extend their sincere thanks and appreciation to Universitas Sebelas Maret and all the participants who contributed to the successful implementation of this project

CONFLICT OF INTEREST

There is no conflict of interest.

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