

Effectiveness of Psychoeducation in Enhancing Clean and Healthy Living Behaviour in Kawasi Mining Community, Indonesia

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ABSTRACT

This study aimed to evaluate the effectiveness of psychoeducation in enhancing knowledge and implementation of Clean and Healthy Living Behaviour (PHBS) among residents of Kawasi Village, a mining-affected community in South Halmahera, Indonesia. A one-group pre-test post-test quasi-experimental design was employed, involving 22 participants who received a structured psychoeducational intervention. Data were collected using validated questionnaires administered before and after the intervention. The Wilcoxon Signed Rank Test showed a statistically significant improvement in PHBS understanding ($p = 0.023$), with 18 participants demonstrating increased post-test scores. The findings indicate that psychoeducation is an effective, community-based strategy for promoting health behaviour change, particularly in areas facing environmental and infrastructural challenges. This study underscores the importance of participatory, locally adapted health promotion models and recommends further research with broader populations and longer-term evaluations to assess sustained impact.

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1. Introduction

Public health is a crucial aspect of sustainable development, especially in areas undergoing rapid socio-economic transformation such as the industrial ring. Kawasi Village on Obi Island, South Halmahera, is one example of an area that is undergoing significant changes along with development activities and industrial activities. These changes have had positive impacts in the form of improved infrastructure access, employment opportunities, and community economic growth.

However, the dynamics of environmental change and increasing population density in mining areas like Kawasi present specific challenges to public health efforts, including limited access to clean water, inadequate sanitation facilities, and low awareness of clean and healthy living practices. One of the main challenges is the suboptimal implementation of Clean and Healthy Living Behaviour (PHBS). Basic practices such as handwashing with soap, use of healthy latrines, and cleanliness of the house and environment have not yet become part of the community's routine. This

condition contributes to the high incidence of preventable diseases, such as diarrhoea, upper respiratory tract infection (URTI), and skin disorders.

According to the Head of the South Halmahera Health Office, as reported by Sibelanews (2023), the increase in diarrhoea cases highlights the urgent need to raise public awareness about the importance of maintaining environmental hygiene and consistently practicing clean and healthy living behaviours. He also encouraged the community to be more active in Posyandu activities, provide exclusive breastfeeding, and strengthen immunity to prevent infectious diseases [1]. Meanwhile, data from Polindes Kawasi showed that during 2021–2022, there were 1,530 cases of acute respiratory infections (ARI), which is relatively high for a village-level health facility serving a limited population. In the same period, 303 infants aged 0–1 month were recorded accessing health services, indicating a substantial demand for early childhood healthcare [2]. This figure reflects the need for improved health services and more intensive health promotion efforts amid ongoing changes.

PHBS is all health behaviours that are carried out on the basis of personal awareness, so that individuals and families are able to help themselves in the health sector and play an active role in community activities. PHBS aims to improve the quality of health through a process of awareness, making the community an agent of change in living a clean and healthy life behaviour. There are several PHBS settings, including households, schools, workplaces, health facilities, and public places. Indicators of PHBS in households include childbirth by health workers, exclusive breastfeeding, weighing toddlers regularly, washing hands with soap, using clean water, using healthy latrines, eradicating mosquito larvae, consuming fruits and vegetables, daily physical activity, and not smoking in the house [3]

One approach that has proven effective in raising health awareness is psychoeducation. Different from traditional counselling, psychoeducation emphasises an educational process that is participatory and adaptive to the local context. Rather than simply delivering information, psychoeducation engages communities in discussions, simulations and reflections that encourage voluntary changes in attitudes and behaviours. This approach also bridges cultural barriers and strengthens the capacity of individuals to make healthier decisions for themselves and their environment.

Various studies support the effectiveness of this approach. A meta-analysis by Tirla, Sârbescu and Rusu [4] showed that psychoeducative interventions have a significant impact on changing different types of behaviour, with strong effects seen after the intervention ($d = 1.87$). These results confirm that approaches that combine feedback, training, and motivation are much more effective than one-way interventions. Similarly, research by Aşantuğrul and Barut [5] found that a psychoeducational programme based on a cognitive-behavioural approach significantly reduced the level of social media addiction in adolescents, demonstrating the potential of psychoeducation in changing habits that are deeply rooted in everyday life.

Specifically in the context of PHBS, a study by Astutik et al. [6] emphasised the importance of interactive counselling methods in improving community understanding of PHBS. Through a participation-based approach, activities such as counselling with questions and answers, handwashing practice education, and environmental community service were proven to significantly increase community understanding scores - by 11.61% in housewives and 19.71% in elementary school students. These results support the use of the psychoeducative approach as a key method in public health education.

Kawasi Village is currently being developed as an Ecovillage, an environmentally and socially sustainable settlement development initiative. The programme is a collaboration between the community, government and private sector in creating a healthy and sustainable living environment. Ecovillage provides a strategic opportunity to integrate psychoeducation in strengthening PHBS, through planned, collaborative and community-based activities.

This study was conducted to evaluate the effectiveness of psychoeducation in improving knowledge and behavioural implementation of PHBS in Kawasi Village. The findings are expected to contribute to the development of scalable, participatory health promotion strategies, especially for communities facing similar environmental and infrastructural challenges.

2. Methods

Research Design

This study employed a quasi-experimental design with a one-group pre-test post-test method. According to Creswell, quasi-experiments are experimental studies conducted without randomization, typically used when random assignment is not feasible [7]. In this approach, a single group of participants is measured before (pre-test) and after (post-test) receiving an intervention, allowing for an assessment of any observed changes [8]. The intervention in this study was a psychoeducation session on Clean and Healthy Living Behaviour (PHBS), and the outcome was measured by comparing participants' responses from pre- and post-intervention assessments.

Research Implementation

The study was conducted on Wednesday, 25 April 2024, and Thursday, 26 April 2024, at the Polindes of Kawasi Baru Village, Obi District, South Halmahera Regency, North Maluku Province. Although more than 50 individuals attended the activity, only 22 participants completed both the pre-test and post-test questionnaires and were thus eligible for data analysis. The design steps are summarised in **Table 1**.

Table 1. Schematic of one-group pre-test post-test Design

Pre-Test (O ₁)	Intervention (X)	Post-Test (O ₂)
Measurement before intervention	PHBS psychoeducation	Measurement after intervention

Note:

O₁: Pre-test administered before treatment (PHBS psychoeducation)

X: Treatment/intervention – PHBS psychoeducation provided to Kawasi residents

O₂: Post-test administered after treatment

Research Population and Sample

The population in this study consisted of all residents of Kawasi Village, Obi District. The sample was selected using a simple random sampling technique, ensuring equal opportunity for each individual to be chosen. According to Sugiyono, simple random sampling is a method that selects members of a population randomly, without regard to population strata [9].

Data Collection Methods

Data were collected using structured questionnaires administered both before (pre-test) and after (post-test) the intervention. Each questionnaire contained 20 multiple-choice questions designed to measure the participants' understanding of

PHBS, including aspects such as hygiene, sanitation, nutrition, and household health practices. Prior to participation, all subjects were informed about the research objectives and provided informed consent, ensuring voluntary involvement in the study.

Data Analysis Technique

To assess the effect of the psychoeducational intervention, the Wilcoxon Signed Rank Test was used. This non-parametric statistical test is appropriate for evaluating differences between two related samples that do not follow a normal distribution. It is commonly used when analyzing ordinal data. The decision rule is based on the p-value: if the *Asymp. Sig* value is less than 0.05, the null hypothesis (H_0) is rejected, indicating a significant difference between pre-test and post-test scores. Conversely, if the value exceeds 0.05, H_0 is accepted.

Ethical Considerations

This study did not require approval from an institutional ethics committee due to its non-interventional and low-risk nature. Nevertheless, all participants were informed about the study procedures and objectives, and written informed consent was obtained prior to participation.

3. Results and Discussion

Statistical Analysis Results

The analysis of pre-test and post-test data using the Wilcoxon Signed Rank Test revealed a statistically significant improvement in participants' understanding of Clean and Healthy Living Behaviour (PHBS) following the psychoeducational intervention. As shown in **Table 2**, four participants experienced a decrease in scores (negative ranks) with a mean rank of 14.25 and a sum of ranks of 57. Meanwhile, 18 participants demonstrated improved post-test scores (positive ranks), with a mean rank of 10.89 and a total sum of ranks of 196. No ties were identified, indicating that all participants experienced a change in score following the intervention.

Table 2. Wilcoxon Signed Rank Test Results (Descriptive Statistics)

		N	Mean Rank	Sum of Ranks
Posttest - Pretest	Negative Ranks	4 ^a	14.25	57.00
	Positive Ranks	18 ^b	10.89	196.00
	Ties	0 ^c		
	Total	22		

The significance value obtained from the Wilcoxon Signed Rank Test is shown in **Table 3**, with $Z = -2.270$ and $p = 0.023$. Since the p-value (0.023) is less than the significance level of 0.05, it can be concluded that there is a statistically significant difference between the pre-test and post-test scores. These findings support the conclusion that the psychoeducational intervention significantly improved participants' understanding and awareness of PHBS.

Table 3. Wilcoxon Signed Rank Test Results (Significance)

Test	Z	Asymp. Sig. (2-tailed)
Post-test - Pre-test	-2.270 ^a	0.023

Note: ^a Based on negative ranks.

Interpretation and Implications

The results confirm that the majority of participants (18 out of 22) experienced improved understanding of PHBS after participating in the intervention, with no respondents maintaining the same score. This demonstrates the positive impact of psychoeducation in altering health-related knowledge and behaviours within a short period. The absence of ties suggests that the intervention was uniformly impactful across participants.

These findings reinforce the role of psychoeducation as a promotive and preventive health strategy, particularly in communities located in environmentally vulnerable areas such as mining regions. Kawasi Village, situated within the industrial mining zone of Obi Island, faces unique public health challenges due to increased industrial activity and ecological disruption. Under such conditions, psychoeducation provides a platform for community empowerment by equipping individuals with knowledge and critical awareness to adopt healthier lifestyles.

The findings of this study align with those of Djuwadi and Sunindya [10], who demonstrated that community-based health education effectively improved PHBS knowledge among vulnerable groups. Similarly, research by Shaviratri and Pramadi [11] showed that structured psychoeducational programs on hygiene and waste management were successful in changing community habits. Hartini et al. [12] further confirmed that psychoeducation, when coupled with strengthened public commitment, leads to sustainable behaviour change even in socially complex environments.

These results suggest that psychoeducation is not only effective as a one-time intervention but also has the potential to be integrated into long-term community-based public health strategies. The participatory nature of the approach allows for better acceptance and retention of knowledge among participants, especially when tailored to local cultural and environmental contexts [13].

Strengths, Limitations, and Recommendations

A key strength of this study lies in its application within a real-world setting marked by environmental and infrastructural constraints. The use of a pre-test post-test design also provides measurable evidence of the intervention's effectiveness.

However, several limitations should be acknowledged. The sample size was relatively small and limited to a single village, reducing the generalizability of the results. Additionally, the absence of a control group makes it difficult to isolate the effects of the intervention from other external factors. The short duration of evaluation further limits insights into the sustainability of the behavioural change.

Future research is recommended to involve a larger and more diverse population, incorporate control groups, and adopt longitudinal designs to assess the long-term impact of psychoeducational interventions on health behaviour change.

Broader Implications for Health Promotion

The integration of psychoeducation into broader community-based health programs could serve as a catalyst for sustainable behaviour change, particularly in settings with limited access to formal healthcare. Psychoeducation not only disseminates information but also fosters critical reflection and behavioural intention, leading to long-term adoption of healthy practices. When supported by local leaders and culturally appropriate communication strategies, such interventions can transform public health norms [14].

The findings of this study may serve as a foundation for public health stakeholders in designing community-driven educational initiatives that are participatory, adaptive, and context-sensitive. Although currently limited in scale, this approach provides a replicable model for implementation in other high-risk or underserved areas, with appropriate adjustments to match local needs and capacities [15].

4. Conclusion

This study demonstrates that psychoeducation significantly improves community knowledge and awareness regarding Clean and Healthy Living Behaviour (PHBS), particularly in environmentally vulnerable, mining-affected areas such as Kawasi Village on Obi Island. The use of participatory and contextually tailored educational strategies proved effective in encouraging behavioural change within a short period. The findings align with existing literature supporting the value of psychoeducational interventions in public health promotion. However, limitations such as the small sample size, absence of a control group, and short follow-up period restrict the generalizability of the findings. Future studies should involve more representative samples, adopt controlled and longitudinal designs, and evaluate the long-term impact of psychoeducation in similar socio-environmental contexts.

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Conflicts of Interest:

The authors declare no conflicts of interest related to the conduct, authorship, or publication of this research.

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