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One Health-Based Education on Zoonotic Disease Prevention to Improve Community Knowledge in Palembon Village, Bojonegoro Regency

Erma Safitri *, Mustofa Helmi Effendi, Yulianna Puspitasari, Dadik Rahardjo, Tjuk Imam Restiadi and Eka Pramyrtha Hestianah

Department of Veterinary Science, Faculty of Veterinary Medicine, Universitas Airlangga, Surabaya, Indonesia.

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Abstract

Zoonotic diseases remain an important public health issue because they can be transmitted from animals to humans through direct contact, contaminated environments, or poor hygiene practices. This community service activity aimed to improve public knowledge of zoonotic disease prevention through a One Health-based education program in Palembon Village, Bojonegoro Regency. The activity was conducted on May 5, 2026, at Palembon Village Hall and involved 30 community participants. The methods included health education, interactive discussion, and evaluation using pre-test and post-test questionnaires. The educational materials covered the definition of zoonotic diseases, transmission routes, environmental risk factors, preventive measures, and the relationship between human, animal, and environmental health. The results showed an increase in participants' knowledge after the education program. The average pre-test score was 58.3, while the average post-test score increased to 95.0. Participants categorized as having good knowledge increased from 5 people (16.7%) before the activity to 29 people (96.7%) after the activity. These findings indicate that One Health-based education was effective in improving community knowledge and awareness of zoonotic disease prevention.

Keywords: Community Education; Knowledge Improvement; One Health; Public Health; Zoonotic Disease Prevention

1. Introduction

Zoonotic diseases are diseases that can be transmitted from animals to humans and remain an important public health concern. Zoonotic transmission may occur through close interaction between humans and companion animals, livestock, wildlife, or contaminated environments. In Indonesia, zoonotic diseases such as rabies, leptospirosis, and anthrax continue to pose threats because they can affect public health, social conditions, economic stability, security, and community welfare if not properly prevented [1].

Palembon Village, Bojonegoro Regency, is a rural area where community members may have close interaction with animals and the surrounding environment. This condition can become a risk factor when the community has limited knowledge about environmental hygiene, proper animal care, early recognition of disease symptoms in animals, and prevention of disease transmission from animals to humans. Common problems in the community include limited understanding of zoonotic diseases, the perception that animal diseases are not always related to human health, and inadequate preventive habits through clean and healthy living practices.

This community service activity aimed to improve the knowledge of the Palembon Village community regarding the prevention of zoonotic diseases through a One Health-based educational approach. The One Health approach emphasizes that human health, animal health, and environmental health are interconnected and cannot be separated.

* Corresponding author: Erma Safitri

The World Health Organization defines One Health as an integrated approach that aims to balance and optimize the health of people, animals, and ecosystems collectively [2].

The solution offered in this activity was health education for the community regarding the definition of zoonotic diseases, common types of zoonotic diseases, modes of transmission, risk factors, and preventive measures that can be applied in daily life. The education also emphasized the importance of maintaining environmental cleanliness, washing hands after contact with animals, keeping animal housing clean, monitoring the health of companion animals and livestock, and immediately reporting suspicious signs of disease in animals or humans to health workers or relevant authorities.

Theoretically, zoonotic disease prevention cannot be carried out only from the perspective of human health, but must also involve animal and environmental health. This is in line with the One Health concept, which emphasizes cross-sectoral and multidisciplinary collaboration to prevent, detect, and respond to disease threats more effectively. The World Health Organization states that approximately 60% of newly reported infectious diseases globally originate from animals, including domestic animals and wildlife. Therefore, prevention strategies based on the relationship between humans, animals, and the environment are important to implement at the community level [2].

The urgency of zoonotic disease prevention education is also supported by the continuing occurrence of zoonotic disease cases in Indonesia, including rabies. The Ministry of Health of the Republic of Indonesia reported that rabies remains a public health threat and requires strengthened prevention through increased community awareness and improved health service preparedness [3]. Therefore, community education is an important strategy to increase awareness and prevent zoonotic disease transmission as early as possible.

Through this educational activity, the community is expected to gain a better understanding of the risks of zoonotic diseases and to be able to apply preventive measures independently. In addition, this activity is expected to increase community awareness of the importance of maintaining human, animal, and environmental health collectively. Thus, this community service activity was not only directed toward improving knowledge, but also toward encouraging preventive behavior that supports sustainable public health in Palembon Village, Bojonegoro Regency.

2. Materials and methods

2.1. Study Location and Time

This community service activity was conducted in Palembon Village, Bojonegoro Regency, Indonesia. The program was carried out on May 5, 2026, at Palembon Village Hall, Bojonegoro Regency.

2.2. Participants

The target participants were community members who had potential interaction with companion animals, livestock, and the surrounding environment. The participants included local residents, companion animal owners, small-scale livestock farmers, community health cadres, and community leaders who played a role in disseminating health information to the community. A total of 30 participants were involved in this activity.

2.3. Educational Materials

The educational materials provided in this activity included the definition of zoonotic diseases, common types of zoonotic diseases, modes of transmission from animals to humans, environmental risk factors, and preventive measures based on the One Health approach. The One Health approach was used because the prevention of zoonotic diseases is closely related to human health, animal health, and environmental hygiene.

2.4. Implementation Procedure

The implementation of this community service activity consisted of three stages: preparation, implementation, and evaluation.

In the preparation stage, the community service team conducted an initial identification of community needs, prepared educational materials, developed counseling media, and coordinated with Palembon Village officials. Coordination was carried out to ensure that the activity was appropriate to local community conditions and received support from village authorities. The team also prepared evaluation instruments in the form of pre-test and post-test questionnaires to measure changes in participants' knowledge before and after the educational intervention.

In the implementation stage, the activity began with an opening session and an explanation of the objectives of the program. Participants were then given a pre-test to assess their initial knowledge of zoonotic diseases and their prevention. After that, the community service team delivered the educational material directly using simple and understandable language. The presentation was supported by examples of daily preventive practices, such as washing hands after contact with animals, maintaining cage cleanliness, monitoring the health of companion animals and livestock, and reporting immediately if animals or humans showed suspicious symptoms of disease.

After the educational session, the activity continued with an interactive discussion and question-and-answer session. This session allowed participants to share their experiences, obstacles, and questions related to the prevention of zoonotic diseases in their living environment.

2.5. Roles of the Community Service Team and Stakeholders

The community service team was responsible for designing the program, preparing educational materials, delivering the counseling session, guiding the discussion, and evaluating the results of the activity. Village officials assisted in coordinating participants, providing the activity venue, and supporting the implementation process. Community members participated actively in the program, gave responses during the discussion, and were expected to apply the knowledge obtained in their daily lives.

2.6. Evaluation Method

Evaluation was conducted by comparing participants' pre-test and post-test scores to determine the increase in knowledge after the educational intervention. In addition, evaluation was also carried out through observation during the activity, particularly regarding participants' activeness in attending the counseling session, asking questions, and participating in the discussion.

2.7. Data Analysis

The data were analyzed using simple descriptive analysis by comparing the level of participants' knowledge before and after the education program. The results of the pre-test and post-test were used to assess the effectiveness of the educational activity in improving participants' knowledge of zoonotic disease prevention.

2.8. Success Indicators

The indicators of program success included increased participant knowledge of zoonotic diseases, improved understanding of the relationship between human, animal, and environmental health, and increased community awareness of the importance of applying zoonotic disease prevention measures. The activity was considered successful if participants showed higher post-test scores compared with pre-test scores, actively participated in the discussion, and were able to mention preventive measures for zoonotic diseases that could be applied at home and in the community.

3. Results

3.1. Implementation of the Educational Activity

The One Health-based education program on zoonotic disease prevention was conducted on May 5, 2026, at Palembon Village Hall, Bojonegoro Regency. A total of 30 community members participated in this activity. The evaluation was carried out using pre-test and post-test questionnaires to assess changes in participants' knowledge before and after the educational intervention.

The educational materials included the definition of zoonotic diseases, modes of zoonotic disease transmission, environmental risk factors, preventive measures in daily life, and the relationship between human, animal, and environmental health. The activity was delivered through direct counseling, interactive discussion, and a question-and-answer session.

Participants' Knowledge Before and After Education

The pre-test results showed that most participants did not yet have optimal knowledge regarding zoonotic diseases. This was indicated by the number of participants categorized as having poor and moderate knowledge before the

educational activity. After the education was provided, the post-test results showed a substantial increase in participants' knowledge.

Table 1 Pre-test and post-test results of participants' knowledge

No.	Knowledge Category	Score Range	Pre-test n (%)	Post-test n (%)
1	Poor	< 60	13 (43.3%)	0 (0%)
2	Moderate	60–79	12 (40.0%)	1 (3.3%)
3	Good	80–100	5 (16.7%)	29 (96.7%)
Total			30 (100%)	30 (100%)

Based on Table 1, before the educational activity, 13 participants or 43.3% were categorized as having poor knowledge, 12 participants or 40.0% had moderate knowledge, and only 5 participants or 16.7% had good knowledge. After the educational activity, the number of participants with good knowledge increased to 29 participants or 96.7%. Meanwhile, only 1 participant or 3.3% remained in the moderate category, and no participant was categorized as having poor knowledge.

These findings indicate that One Health-based education on zoonotic disease prevention was able to improve community knowledge in Palembon Village. This result is in line with Purnaningsih et al. [4], who reported that community education related to zoonotic risk increased participants' knowledge from 51% in the pre-test to 97.5% in the post-test.

3.2. Mean Pre-test and Post-test Scores

The increase in participants' knowledge was also reflected in the mean pre-test and post-test scores.

Table 2 Mean pre-test and post-test scores of participants

No.	Type of Test	Number of Participants	Mean Score
1	Pre-test	30	58.3
2	Post-test	30	95.0
	Increase		36.7

Based on Table 2, the mean pre-test score was 58.3, while the mean post-test score increased to 95.0. Therefore, there was an increase of 36.7 points after the participants received the educational intervention. This improvement shows that the counseling activity helped participants better understand zoonotic diseases, especially in recognizing sources of transmission, risk factors, and preventive measures that can be applied in household and community settings.

The increase in the mean post-test score also indicates that the One Health approach is appropriate for community service activities in rural areas. This approach emphasizes that human health cannot be separated from animal health and environmental health. In village communities, close interaction with companion animals and livestock is common; therefore, understanding the relationship between humans, animals, and the environment is important in preventing zoonotic disease transmission.

3.3. Knowledge Improvement Based on Indicators

The questionnaire also assessed several knowledge indicators, including the definition of zoonotic diseases, transmission routes, environmental risk factors, preventive practices, and the relationship between human, animal, and environmental health.

Table 3 Questionnaire results based on knowledge indicators

No.	Knowledge Indicator	Correct Pre-test n (%)	Correct Post-test n (%)
1	Definition of zoonotic diseases	16 (53.3%)	29 (96.7%)
2	Modes of zoonotic transmission	15 (50.0%)	29 (96.7%)
3	Environmental risk factors of zoonosis	14 (46.7%)	28 (93.3%)
4	Zoonotic disease prevention in daily life	17 (56.7%)	30 (100%)
5	Relationship between human, animal, and environmental health	13 (43.3%)	29 (96.7%)

Based on Table 3, all knowledge indicators improved after the educational activity. In the indicator of the definition of zoonotic diseases, the number of participants who answered correctly increased from 16 participants or 53.3% to 29 participants or 96.7%. In the indicator of zoonotic transmission routes, the number of participants who answered correctly increased from 15 participants or 50.0% to 29 participants or 96.7%. This finding shows that after receiving education, participants had a better understanding that zoonotic diseases can be transmitted through direct contact with infected animals, animal bites, contaminated food or water, and unclean environments.

3.4. Environmental Risk Factors and Preventive Practices

Improvement was also observed in the indicator of environmental risk factors. Before the education, only 14 participants or 46.7% answered correctly. After the education, this number increased to 28 participants or 93.3%. This indicates that participants began to understand that poor environmental sanitation, unclean animal cages, unmanaged animal waste, and the habit of not washing hands after contact with animals may increase the risk of zoonotic disease transmission.

Knowledge of risk factors is important because people who understand the sources of risk are more likely to adopt preventive measures. This finding is consistent with Kusumaningrum et al. [6], who stated that education about scabies as a zoonotic disease in livestock improved farmers' understanding of disease transmission and prevention after counseling.

The indicator of zoonotic disease prevention in daily life showed the highest post-test result, increasing from 17 participants or 56.7% to 30 participants or 100%. This result shows that all participants were able to understand simple preventive measures after the educational activity. These measures include washing hands after contact with animals, maintaining cage cleanliness, wearing footwear in risky environments, maintaining food and water hygiene, avoiding direct contact with sick animals, and reporting animal disease cases to relevant officers.

3.5. Understanding of the One Health Concept

The indicator related to the relationship between human, animal, and environmental health increased from 13 participants or 43.3% to 29 participants or 96.7%. This improvement indicates that participants began to understand the basic principles of One Health. Before the education, some participants still considered animal diseases as separate from human health problems. After the education, participants understood that human health, animal health, and environmental health are interconnected.

This understanding is essential because zoonotic disease prevention cannot be carried out only by maintaining personal health. It must also involve proper animal care and environmental hygiene. Abrahim et al. [7] emphasized that community knowledge, perceptions, and practices regarding zoonotic diseases play an important role in disease prevention and control, especially among communities that have close contact with animals and their surrounding environment.

4. Discussion

The results of this activity show that direct education, interactive discussion, and question-and-answer sessions are suitable methods for community service programs. During the activity, participants showed positive responses by actively asking questions and sharing experiences related to companion animals, livestock, cage cleanliness, and the

risk of diseases transmitted from animals to humans. The active participation of the community indicates that the material presented was relevant to the conditions and needs of the Palembon Village community.

The findings of this activity are also supported by Ashar et al. [8], who reported that community socialization increased participants' knowledge regarding leptospirosis vector control, with the mean score increasing from 5 to 9.2 and an N-Gain effectiveness value of 84.1%. Similarly, Fadillah et al. [5] found that education on animal health and zoonotic disease prevention improved community knowledge from a score of 6.00 to 9.55 and increased public awareness of animal health and zoonotic disease risks.

The achievement of the program indicators can be seen from the increase in post-test scores compared with pre-test scores, the increase in participants categorized as having good knowledge to 96.7%, and the increase in the mean post-test score to 95.0. In addition, the success of the activity was also reflected in the participants' ability to mention zoonotic disease prevention measures, such as maintaining personal hygiene, keeping animals healthy, cleaning the environment, and reporting sick animals to relevant authorities.

Overall, the results indicate that One Health-based education on zoonotic disease prevention was effective in improving the knowledge of the Palembon Village community in Bojonegoro Regency. Education delivered in a simple, direct, and context-based manner helped participants understand the risks of zoonotic diseases and the preventive measures that can be applied in daily life. These findings strengthen previous studies showing that community health education, particularly related to zoonotic diseases, can improve knowledge, awareness, and community readiness to prevent disease transmission. Therefore, similar educational activities should be conducted continuously by involving community members, village officials, health workers, and animal health officers to optimize zoonotic disease prevention efforts.

5. Conclusion

The One Health-based education program on zoonotic disease prevention conducted in Palembon Village, Bojonegoro Regency, successfully improved community knowledge regarding zoonotic diseases and their prevention. The results showed a clear increase in participants' knowledge after the educational intervention, as indicated by the improvement in the mean score from 58.3 in the pre-test to 95.0 in the post-test. The number of participants categorized as having good knowledge also increased from 5 participants (16.7%) before the activity to 29 participants (96.7%) after the activity. These findings indicate that direct community education, supported by interactive discussion and practical examples, is effective in improving public understanding of zoonotic disease transmission, environmental risk factors, preventive measures, and the relationship between human, animal, and environmental health. The significance of this activity lies in its contribution to increasing community awareness and encouraging preventive behavior based on the One Health approach. Therefore, similar educational programs should be implemented continuously and collaboratively involving communities, village authorities, health workers, and animal health officers to strengthen zoonotic disease prevention at the community level.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare that there are no financial or non-financial conflicts of interest related to the publication of this article

Statement of ethical approval

This community service activity did not require formal ethical approval because it did not involve clinical intervention, invasive procedures, biological sample collection, or the use of confidential personal data. The activity was conducted as a community education program.

Statement of informed consent

All participants were informed about the purpose of the activity, and their participation in the pre-test and post-test evaluation was voluntary

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