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1 message

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Integrated Health Education (IHE) Methods: An Impact on Tuberculosis Health Education for the Sub-district of Sumowono Society, Indonesia

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Abstract

Case finding of Tuberculosis (TB) in Semarang Regency is still in the low category. Community empowerment is needed to assist in the handling and determination of TB cases. The IHE (Integrated Health Education) method as a method of health education was developed through counseling and training to support community empowerment. The purpose of this study was to determine the effect and effectiveness of the IHE method on the knowledge and attitudes of *Pemberdayaan Kesejahteraan Keluarga* (Empowerment of Family Welfare; PPK) members regarding TB disease. This study used a quasi-experimental one-group pretest-posttest. The sample in this study was 25 active members of PPK in the Sumowono sub-district. Data were analyzed using the Wilcoxon test and N-Gran Score. The results showed an effect of the IHE method on the knowledge ($p = 0.034$) and attitudes ($p = 0.029$) of PPK members about TB disease. The IHE method effectively improved the attitudes of PPK members towards TB disease (mean: 61.43%). There was an increase in the knowledge and attitudes of PPK mothers about TB disease through health education using the IHE method. The development in this method is needed to be applied as a method of health education in various other diseases.

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INTRODUCTION

Globally, 95% of Tuberculosis (TB) cases and 98% of TB deaths occur. The World Health Organization (WHO) reported that in 2019, there were at least 10 million TB people with 1.2 million deaths due to TB. TB is still a global emergency problem for humanity (WHO, 2020). In Indonesia, the spread of pulmonary TB from year to year has increased by 2-5%. The prevalence of TB in Indonesia is 660 per 100,000 population, with 1 million new cases each year (Kemenkes, 2019).

One of the national TB strategies in TB control is case finding and TB treatment (Ruru et al., 2018). The report from the Indonesian Ministry of Health in 2019, for the last ten years, Indonesia has experienced an average Case Detection Rate (CDR) increase. In 2019, CDR in Indonesia was reported at 64.5%. Even so, this figure is still far from the WHO target of $\geq 90\%$. Of the 37 provinces in Indonesia, only two areas have achieved this target. Most of the regions have not reached one of them, Central Java Province, which is reported to only have a CDR of 65.8% in 2019 (Kemenkes, 2019). One of the areas in Central Java Province is the Semarang Regency which shows that in 2019, the TB discovery rate per 10,000 population was 174.99. The success rate of TB discovery was only around 84.65%. This figure proves that the percentage is still below the national TB target of 90% (Dinas Kesehatan Kabupaten Semarang, 2019).

Several significant efforts need to be made to achieve this target, including community empowerment, early detection and improving the quality of DOTS in all health facilities (Latifah et al., 2018; Rahayu et al., 2015). Community empowerment efforts are carried out to increase public awareness of TB disease, prevention, and treatment (Arini, 2012; Kartika, 2015). The involvement of the community and TB patients in TB control will be effective if implemented by building partnerships between the health sector and the community. It will ensure the public and patients have the same information about TB, raise awareness about TB, and have mutual responsibility for TB control (Reviono et al., 2013).

Sumowono's Public Health Center is one of the health centers in the Semarang Regency, requiring an increase in community empowerment efforts in controlling TB. The reported number of suspect findings is still low, with high cases compared to other health centers in Semarang Regency. In 2018, the number of TB Acid-Fast Bacilli (+) patients in the Sumowono Community Health Center work area was 7 out of a total of 62 people. It is very likely to increase the incidence of TB significantly in the future. The TB Case Notification Rate (CNR) in Sumowono District has increased from year to year. In 2017, CNR was reported to be 139, which then expanded in 2018 and 2019 to 169 and 214 per 10,000 population, respectively. However, this increase did not last long because it was exacerbated by the entry of COVID-19 in 2020, resulting in a drastic drop in TB case detection. (Dinas Kesehatan Kabupaten Semarang, 2019).

Given these conditions, community empowerment efforts through health education are needed to increase public awareness in the Sumowono area. Following the study in Ethiopia in 2021 reported insufficient knowledge of TB associated with high transmission and delays in seeking TB treatment. (Abebe & Demissie, 2012). The same is the case with research Bisallah et al. in Nigeria. This study reported that providing health education intervention programs on TB to HIV patients effectively increases their knowledge, attitudes, and behavior towards TB (Bisallah et al., 2018).

Therefore, the IHE (Integrated Health Education) method is a health education method needed to maximize community empowerment activities. In the form of health education through counseling about TB disease, its prevention, and treatment, was developed with training on how to detect TB early in the community. One of the targets in community empowerment is the *Pemberdayaan Kesejahteraan Keluarga* (Empowerment of Family Welfare; PPK) members because one aspect of the PPK program is the health sector. This condition can be used to increase the role of PPK members, especially in TB case detection programs. With the background of the above problems, this study aims to determine the effect and effectiveness of the Integrated Health Education (IHE) method on the

knowledge and attitudes of PKK members about TB disease to increase TB case detection, especially in Sumowono District, Semarang Regency.

METHOD

This type of research was a quasi-experimental research design with a One Group Pre-test Post-test. The study was started from May to August and was conducted in Sumowono District. The population in this research was 25 women who were members of the PKK in the region. The sampling technique used total sampling so that all PKK members became samples in this experiment. The criteria including being active members of the PKK and having agreed to participate in this research.

The Integrated Health Education (IHE) method was an intervention method provided to PKK members through counseling activities about TB disease, prevention and early detection of TB, and training to find cases in the community. The data collection process used a questionnaire as a pre-test and post-test instrument containing questions about knowledge and attitudes about TB disease, prevention, and early detection. Retrieval of data through a pre-posttest questionnaire aims to determine the description and influence of the IHE method to increase the knowledge and attitudes of PKK Sumowono mothers about TB disease, prevention, and how to detect TB early. The media used during outreach and training uses videos, demo tools, and a pocketbook for TB early detection.

Data were analyzed using the data normality test to determine the distribution of data. The test results proved that the data were not normally distributed, so the Wilcoxon test analysis was carried out to assess the effect of the IHE method on the knowledge and attitudes of PKK members regarding TB disease and the N-Gain Score test to determine the effectiveness of the technique.

RESULT AND DISCUSSION

Data from the pre-posttest results was tested by the data normality test to determine whether the data distribution was normal or not. The test results are presented in Table 1 below.

Table 1. The results of the normality test of the pre-test and post-test data on the knowledge and attitudes of PKK members in the Sumowono sub-district about TB disease (n=25)

Variable	<i>p-value</i>
Knowledge	
<i>Pre-test</i>	0,000
<i>Post-test</i>	0,000
Attitudes	
<i>Pre-test</i>	0,000
<i>Post-test</i>	0,000

*pvalue>0.05 = normally distributed data

The data normality test results found that the pre-test p-value of each variable, both knowledge, and attitude, had a value of 0,000. Likewise, the post-test has a p-value of 0,000. So, this result can be concluded that the pre-post test data has an abnormal data distribution ($p < 0.05$). Therefore, further data analysis to determine the effect of IHE media on increasing the knowledge and attitudes of PKK members about TB disease using the Wilcoxon test.

The analysis results in Table 2 report that the average value of knowledge before IHE intervention is 4.80. After the intervention, IHE increased to 5.04. This increase explains that the provision of intervention provides a change in the knowledge score to be higher. It is also evidenced by the results of the p-value at the knowledge level of 0.034. So it means that there is an effect of the provision of IHE method intervention on the level of knowledge of PKK members in the Sumowono sub-district about TB disease.

Table 2. The effect of the IHE method intervention on the knowledge and attitudes of PKK members in Sumowono sub-district about TB

Variable	<i>Mean</i>	<i>Median</i>	<i>p-value</i>
Knowledge			
<i>Pre-test</i>	4.80	5.00	0.034
<i>Post-test</i>	5.04	5.00	
Attitudes			
<i>Pre-test</i>	5.40	5.00	0.029
<i>Post-test</i>	5.76	6.00	

*p-value<0.05 = significant

An increase in the mean value also occurred in the attitudes of PKK members towards TB disease. The mean value of attitude before being given the IHE method was 5.40, and then after being given the IHE method, it was 5.76. The result of the p-value is 0.029 (<0.05), which means that there is an effect of the IHE method intervention on the attitudes of PKK members about TB disease.

Table 3. The effectiveness of the IHE method in increasing the knowledge and attitudes of PKK members in the Sumowono sub-district about TB disease

Variable	N-Gain Score (%)		
	<i>Mean</i>	<i>Max</i>	<i>Min</i>
Knowledge	14.00	100	-100
Attitudes	61.54	100	-100

To determine the effectiveness of the IHE method on the knowledge and attitudes of TB cadres about TB disease, the N-Gain Score test was performed. As seen in table 3, it is reported that the mean value of knowledge is 14%. In the category of effectiveness interpretation of N-Gain based on Hake (1999), if the mean value is <40%, it is categorized as an ineffective intervention. So, the IHE method was not effective in increasing the knowledge of PKK members in the Sumowono sub-district about TB disease, prevention, treatment, and early detection methods in the community.

In contrast to the knowledge variable, the attitude variable presented in table 3 shows a mean value of 61.54%. This value is categorized as a moderately effective intervention (range: 56% - 75%). Therefore, the IHE method is an effective method to improve the attitudes of PKK members in the Sumowono sub-district towards TB disease, prevention, treatment, and early detection methods in the community.

At the level of knowledge, known that PKK members had good knowledge on the pre-test and improved better with the post-test increase in the knowledge level scores. Following the research objectives, namely, increasing public knowledge and understanding of information on TB disease. In line with research conducted in the City of Mataram in 2014, the provision of TB information and training to health cadres had a significant relationship with the role of health cadres in TB case detection (Sumartini, 2014). An individual will increase knowledge when he gets exposed to some information, increased understanding, and more information obtained and captured through sensing (Sandha & Sari, 2017).

In this intervention, increased knowledge of PKK mothers in Sumowono, Semarang Regency was obtained after counseling and training with the IHE method. The IHE method in education through health counseling and training as a medium for health promotion has been proven to affect public knowledge in Sumowono. In line with Jatmiko's 2018 research conducted in the City of Surakarta, the varied lecture methods have increased general knowledge about TB disease. According

to him, this method is easier to do and readily accepted by the community, especially with the involvement of experts in providing this education (Jatmiko et al., 2018).

The attitude variable also shows an increase due to the influence of the IHE method. The behavior of suspicious discovery by good cadres can be caused by knowledge, attitudes, training, motivation, and support from program managers. Exposure to information will affect the openness and knowledge of a person's thinking. If the information is considered good, then consciously or unconsciously, it will influence someone to behave and act. As per the report of Saraswati's research in Semarang City in 2014, a person exposed to information is 2.2 times at risk of doing good health practices (Saraswati, 2014). Likewise, with research by Raude et al. in Southeastern France in 2012, where participants who have good knowledge of disease prevention behaviors will have a better ability to take disease prevention measures (Raude et al., 2012). This result about health education was also proven in a study at Karanganyar Health Center by Ratnasari et al. Their study indicated that health education through the question and answer lecture method and guidebooks can improve TB disease prevention behavior (D. Ratnasari et al., 2015).

Health education is one of the keys and main elements in health promotion efforts. Health education aims to increase awareness, broaden horizons, acquire and improve skills, and shape attitudes in health for individuals and groups (Przybylska et al., 2014). Research in Iran suggests that the provision of TB health education interventions should focus on the culture and beliefs of a society. This focus aims to make health education readily accepted by the community to maintain a positive attitude. In addition, the involvement of experts or competent people who have the same beliefs in conducting health education is considered more effective. This finding is interesting to review because it can consider health workers in carrying out health promotion programs (Mohammadi et al., 2014).

One of the cores of empowerment activities is creating an independent learning process to make changes continuously. Change through learning, training, and education is often slow, but the changes that occur are more stable and sustainable. Empowerment of the health sector concerns independence in organizing to tackle disease risk factors, especially TB (Sukesi et al., 2017). It is also presented in the IHE method, where health cadres, namely PKK members, are given training to screen and find TB cases in the community. Training is one form of the educational process through training learning objectives or academic targets to gain learning experiences that eventually lead to changes in their behavior (Handayani et al., 2017).

Empowerment of Family Welfare groups is part of community groups that can play a strategic role in health. With their potential, PKK members play a role as health cadres in TB prevention. However, prevention is better than cure. Health cadres are a form of community participation in primary health care developed through integrated service centers, are people who are selected and provided with health skills through the public health centers. (Ratnasari et al., 2019). The role of cadres as activists or managers of primary health efforts in the community will develop and run optimally if cadres have competent credibility, namely the ability or skills in the health sector according to the training that is being attended at the public health center. Besides that, it has safety credibility, which is the trust of the community. Credibility is essential so that cadres can develop their roles to manage a primary health effort. Satisfaction arises when a cadre feels that his credibility has increased with his activities as a cadre (Sumartini, 2014).

It is hoped that PKK members who are members of this intervention can regularly contribute as motivators and motivators for other mothers in the early detection and discovery of TB cases in the community and their families. Thus, it can have a significant impact on reducing TB cases and deaths. The involvement of PKK members in the empowerment program is considered very appropriate, given the considerable potential.

CONCLUSION

There are differences in scores before and after being given counseling and training with the IHE method. It can be seen from the increase in the value of all aspects of the pre-post test, including elements of knowledge and attitudes about TB disease. It is necessary to evaluate each stage of the activity implementation to be conveyed to community leaders to improve early detection activities to increase TB cases. Community leaders as influential people need to be involved in health education and disease prevention in their environment. This research requires further research so that this intervention can be applied in society. The IHE method has proven to effectively improve community attitudes, especially PKK members, towards TB disease and its prevention, but not with the knowledge aspect. So the development of this method is reasonable to do to be applied in the broader community and prevent other diseases in the community.

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Abstract

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INTRODUCTION

Globally, 95% of Tuberculosis (TB) cases and 98% of TB deaths occur. The World Health Organization (WHO) reported that in 2019, there were at least 10 million TB people with 1.2 million deaths due to TB. TB is still a global emergency problem for humanity (WHO, 2020). In Indonesia, the spread of pulmonary TB from year to year has increased by 2-5%. The prevalence of TB in Indonesia is 660 per 100,000 population, with 1 million new cases each year (Kemenkes, 2019).

One of the national TB strategies in TB control is case finding and TB treatment (Ruru et al., 2018). The report from the Indonesian Ministry of Health in 2019, for the last ten years, Indonesia has experienced an average Case Detection Rate (CDR) increase. In 2019, CDR in Indonesia was reported at 64.5%. Even so, this figure is still far from the WHO target of $\geq 90\%$. Of the 37 provinces in Indonesia, only two areas have achieved this target. Most of the regions have not reached one of them, Central Java Province, which is reported to only have a CDR of 65.8% in 2019 (Kemenkes, 2019). One of the areas in Central Java Province is the Semarang Regency which shows that in 2019, the TB discovery rate per 10,000 population was 174.99. The success rate of TB discovery was only around 84.65%. This figure proves that the percentage is still below the national TB target of 90% (Dinas Kesehatan Kabupaten Semarang, 2019).

Several significant efforts need to be made to achieve this target, including community empowerment, early detection and improving the quality of DOTS in all health facilities (Latifah et al., 2018; Rahayu et al., 2015). Community empowerment efforts are carried out to increase public awareness of TB disease, prevention, and treatment (Arini, 2012; Kartika, 2015). The involvement of the community and TB patients in TB control will be effective if implemented by building partnerships between the health sector and the community. It will ensure the public and patients have the same information about TB, raise awareness about TB, and have mutual responsibility for TB control (Reviono et al., 2013).

Sumowono's Public Health Center is one of the health centers in the Semarang Regency, requiring an increase in community empowerment efforts in controlling TB. The reported number of suspect findings is still low, with high cases compared to other health centers in Semarang Regency. In 2018, the number of TB Acid-Fast Bacilli(+) patients in the Sumowono Community Health Center work area was 7 out of a total of 62 people. It is very likely to increase the incidence of TB significantly in the future. The TB Case Notification Rate (CNR) in Sumowono District has increased from year to year. In 2017, CNR was reported to be 139, which then expanded in 2018 and 2019 to 169 and 214 per 10,000 population, respectively. However, this increase did not last long because it was exacerbated by the entry of COVID-19 in 2020, resulting in a drastic drop in TB case detection. (Dinas Kesehatan Kabupaten Semarang, 2019).

Given these conditions, community empowerment efforts through health education are needed to increase public awareness in the Sumowono area. Following the study in Ethiopia in 2021 reported insufficient knowledge of TB associated with high transmission and delays in seeking TB treatment. (Abebe & Demissie, 2012). The same is the case with research Bisallah et al. in Nigeria. This study reported that providing health education intervention programs on TB to HIV patients effectively increases their knowledge, attitudes, and behavior towards TB (Bisallah et al., 2018).

Therefore, the IHE (Integrated Health Education) method is a health education method needed to maximize community empowerment activities. In the form of health education through counseling about TB disease, its prevention, and treatment, was developed with training on how to detect TB early in the community. One of the targets in community empowerment is the *Pemberdayaan Kesejahteraan Keluarga* (Empowerment of Family Welfare; PKK) members because one aspect of the PKK program is the health sector. This condition can be used to increase the role of PKK members, especially in TB case detection programs. With the background of the above

problems, this study aims to determine the effect and effectiveness of the Integrated Health Education (IHE) method on the knowledge and attitudes of PKKmembersabout TB disease to increase TB case detection, especially in Sumowono District, Semarang Regency.

METHOD

This typeofresearchwas a quasi-experimentalresearch design with a One Group Pre-test Post-test. The study was started from May to Augustandwasconducted in Sumowono District. The population in this research was 25 women who were membersofthePKKin the region. The sampling techniqueusedtotal sampling sothatallPKKmembersbecamesamples in this experiment. The criteria including being active membersofthePKKandhavingagreed to participate in this research.

The Integrated Health Education (IHE) methodwasaninterventionmethodprovidedtoPKK membersthroughcounselingactivities about TB disease, prevention and early detection of TB, and training to find cases in the community. The data collection process used a questionnaire as a pre-test and post-test instrument containing questions about knowledge and attitudes about TB disease, prevention, and early detection. Retrieval of data through a pre-posttest questionnaire aims to determine the description and influence of the IHE method to increase the knowledge and attitudes of PKK Sumowono mothersabout TB disease, prevention, and how to detect TB early. The media used during outreach and training uses videos, demo tools, and a pocketbook for TB early detection.

Data were analyzed using the data normality test to determine the distribution of data. The test results proved that the data were not normally distributed, so the Wilcoxon test analysis was carried out to assess the effect of the IHE method on the knowledge andattitudesofPKKmembersregarding TB disease and the N-Gain Score test to determine the effectiveness of the technique.

RESULT AND DISCUSSION

Data from the pre-posttest results was tested by the data normality test to determine whether the data distribution was normal or not. The test results are presented in Table 1 below.

Table1. The results of the normality test of the pre-test and post-test data on the knowledge and attitudes of PKKmembers in the Sumowono sub-district about TB disease (n=25)

Variable	<i>p-value</i>
Knowledge	
<i>Pre-test</i>	0,000
<i>Post-test</i>	0,000
Attitudes	
<i>Pre-test</i>	0,000
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*pvalue>0.05 = normally distributed data

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The analysisresults in Table 2 reportthattheaveragevalueofknowledgebefore IHE interventionis 4.80. After theintervention, IHE increasedto 5.04. Thisincreaseexplainsthattheprovisionofinterventionprovides a change in theknowledgescoretobehigher. Itisalsoevidencedbytheresultsofthe p-valueattheknowledge level of

0.034. Soitmeansthatthereisaneffectoftheprovisionof IHE methodinterventiononthe level ofknowledgeofPKK members in theSumowono sub-districtabout TB disease.

Table2.The effect of the IHE method intervention on the knowledge andattitudesofPKKmembers in Sumowono sub-district about TB

Variable	<i>Mean</i>	<i>Median</i>	<i>p-value</i>
Knowledge			
<i>Pre-test</i>	4.80	5.00	0.034
<i>Post-test</i>	5.04	5.00	
Attitudes			
<i>Pre-test</i>	5.40	5.00	0.029
<i>Post-test</i>	5.76	6.00	

*p-value<0.05 = significant

An increase in the mean value also occurred in theattitudesofPKKmemberstowards TB disease. The mean value of attitude before being given the IHE method was 5.40, and then after being given the IHE method, it was 5.76. The result of the p-value is 0.029 (<0.05), which means that there is an effect of the IHE method intervention on theattitudesofPKKmembersabout TB disease.

Table3.The effectiveness of the IHE method in increasing the knowledge andattitudesofPKKmembers in the Sumowono sub-district about TB disease

Variable	N-Gain Score (%)		
	<i>Mean</i>	<i>Max</i>	<i>Min</i>
Knowledge	14.00	100	-100
Attitudes	61.54	100	-100

To determine the effectiveness of the IHE method on the knowledge and attitudes of TB cadres about TB disease, the N-Gain Score test was performed. As seen in table 3, it is reported that the mean value of knowledge is 14%. In the category of effectiveness interpretation of N-Gain based on Hake (1999), if the mean value is <40%, it is categorized as an ineffective intervention. So, the IHE method was not effective in increasing theknowledgeofPKKmembers in the Sumowono sub-district about TB disease, prevention, treatment, and early detection methods in the community.

In contrast to the knowledge variable, the attitude variable presented in table 3 shows a mean value of 61.54%. This value is categorized as a moderately effective intervention (range: 56% - 75%). Therefore, the IHE method is an effective method to improve theattitudesofPKKmembers in the Sumowono sub-district towards TB disease, prevention, treatment, and early detection methods in the community.

At the level of knowledge, knownthatPKKmembershad good knowledge on the pre-test and improved better with the post-test increase in the knowledge level scores. Following the research objectives, namely, increasing public knowledge and understanding of information on TB disease. In line with research conducted in the City of Mataram in 2014, the provision of TB information and training to health cadres had a significant relationship with the role of health cadres in TB case detection(Sumartini, 2014).An individual will increase knowledge when he gets exposed to some information, increased understanding, and more information obtained and captured through sensing(Sandha & Sari, 2017).

In this intervention, increased knowledge of PKK mothers in Sumowono, Semarang Regency was obtained after counseling and training with the IHE method. The IHE method in education

through health counseling and training as a medium for health promotion has been proven to affect public knowledge in Sumowono. In line with Jatmiko's 2018 research conducted in the City of Surakarta, the varied lecture methods have increased general knowledge about TB disease. According to him, this method is easier to do and readily accepted by the community, especially with the involvement of experts in providing this education (Jatmiko et al., 2018).

The attitude variable also shows an increase due to the influence of the IHE method. The behavior of suspicious discovery by good cadres can be caused by knowledge, attitudes, training, motivation, and support from program managers. Exposure to information will affect the openness and knowledge of a person's thinking. If the information is considered good, then consciously or unconsciously, it will influence someone to behave and act. As per the report of Saraswati's research in Semarang City in 2014, a person exposed to information is 2.2 times at risk of doing good health practices (Saraswati, 2014). Likewise, with research by Raude et al. in Southeastern France in 2012, where participants who have good knowledge of disease prevention behaviors will have a better ability to take disease prevention measures (Raude et al., 2012). This result about health education was also proven in a study at Karanganyar Health Center by Ratnasari et al. Their study indicated that health education through the question and answer lecture method and guidebooks can improve TB disease prevention behavior (D. Ratnasari et al., 2015).

Health education is one of the keys and main elements in health promotion efforts. Health education aims to increase awareness, broaden horizons, acquire and improve skills, and shape attitudes in health for individuals and groups (Przybylska et al., 2014). Research in Iran suggests that the provision of TB health education interventions should focus on the culture and beliefs of a society. This focus aims to make health education readily accepted by the community to maintain a positive attitude. In addition, the involvement of experts or competent people who have the same beliefs in conducting health education is considered more effective. This finding is interesting to review because it can consider health workers in carrying out health promotion programs (Mohammadi et al., 2014).

One of the cores of empowerment activities is creating an independent learning process to make changes continuously. Change through learning, training, and education is often slow, but the changes that occur are more stable and sustainable. Empowerment of the health sector concerns independence in organizing to tackle disease risk factors, especially TB (Sukesi et al., 2017). It is also presented in the IHE method, where health cadres, namely PKK members, are given training to screen and find TB cases in the community. Training is one form of the educational process through training learning objectives or academic targets to gain learning experiences that eventually lead to changes in their behavior (Handayani et al., 2017).

Empowerment of Family Welfare groups is part of community groups that can play a strategic role in health. With their potential, PKK members play a role as health cadres in TB prevention. However, prevention is better than cure. Health cadres are a form of community participation in primary health care developed through integrated service centers, are people who are selected and provided with health skills through the public health centers. (Ratnasari et al., 2019). The role of cadres as activists or managers of primary health efforts in the community will develop and run optimally if cadres have competent credibility, namely the ability or skills in the health sector according to the training that is being attended at the public health center. Besides that, it has safety credibility, which is the trust of the community. Credibility is essential so that cadres can develop their roles to manage a primary health effort. Satisfaction arises when a cadre feels that his credibility has increased with his activities as a cadre (Sumartini, 2014).

It is hoped that PKK members who are members of this intervention can regularly contribute as motivators and motivators for other mothers in the early detection and discovery of TB cases in the community and their families. Thus, it can have a significant impact on reducing TB cases and

deaths. The involvement of PKK members in the empowerment program is considered very appropriate, given the considerable potential.

CONCLUSION

There are differences in scores before and after being given counseling and training with the IHE method. It can be seen from the increase in the value of all aspects of the pre-post test, including elements of knowledge and attitudes about TB disease. It is necessary to evaluate each stage of the activity implementation to be conveyed to community leaders to improve early detection activities to increase TB cases. Community leaders as influential people need to be involved in health education and disease prevention in their environment. This research requires further research so that this intervention can be applied in society. The IHE method has proven to effectively improve community attitudes, especially PKK members, towards TB disease and its prevention, but not with the knowledge aspect. So the development of this method is reasonable to do to be applied in the broader community and prevent other diseases in the community.

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Integrated Health Education(IHE) Methods: An Impact on Tuberculosis Health Education for the Sub-district of Sumowono Society, Indonesia

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Abstract

Case finding of Tuberculosis (TB) in Semarang Regency is still in the low category. Community empowerment is needed to assist in the handling and determination of TB cases. The IHE (Integrated Health Education) method as a method of health education was developed through counseling and training to support community empowerment. The purpose of this study was to determine the effect and effectiveness of the IHE method on the knowledge and attitudes of *Pemberdayaan Kesejahteraan Keluarga* (Empowerment of Family Welfare; PKK) members regarding TB disease. This study used a quasi-experimental one-group pretest-posttest. The sample in this study was 25 active members of PKK in the Sumowono sub-district. Data were analyzed using the Wilcoxon test and N-Gran Score. The results showed an effect of the IHE method on the knowledge ($p = 0.034$) and attitudes ($p = 0.029$) of PKK members about TB disease. The IHE method effectively improved the attitudes of PKK members towards TB disease (mean: 61.43%). There was an increase in the knowledge and attitudes of PKK mothers about TB disease through health education using the IHE method. The development in this method is needed to be applied as a method of health education in various other diseases.

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To determine the effectiveness of the IHE method on the knowledge and attitudes of TB cadres about TB disease, the N-Gain Score test was performed. As seen in table 3, it is reported that the mean value of knowledge is 14%. In the category of effectiveness interpretation of N-Gain based on Hake (1999), if the mean value is <40%, it is categorized as an ineffective intervention. So, the IHE method was not effective in increasing theknowledgeofPKKmembers in the Sumowono sub-district about TB disease, prevention, treatment, and early detection methods in the community.

In contrast to the knowledge variable, the attitude variable presented in table 3 shows a mean value of 61.54%. This value is categorized as a moderately effective intervention (range: 56% - 75%). Therefore, the IHE method is an effective method to improve theattitudesofPKKmembers in the Sumowono sub-district towards TB disease, prevention, treatment, and early detection methods in the community.

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In this intervention, increased knowledge of PKK mothers in Sumowono, Semarang Regency was obtained after counseling and training with the IHE method. The IHE method in education

through health counseling and training as a medium for health promotion has been proven to affect public knowledge in Sumowono. In line with Jatmiko's 2018 research conducted in the City of Surakarta, the varied lecture methods have increased general knowledge about TB disease. According to him, this method is easier to do and readily accepted by the community, especially with the involvement of experts in providing this education (Jatmiko et al., 2018).

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Health education is one of the keys and main elements in health promotion efforts. Health education aims to increase awareness, broaden horizons, acquire and improve skills, and shape attitudes in health for individuals and groups (Przybylska et al., 2014). Research in Iran suggests that the provision of TB health education interventions should focus on the culture and beliefs of a society. This focus aims to make health education readily accepted by the community to maintain a positive attitude. In addition, the involvement of experts or competent people who have the same beliefs in conducting health education is considered more effective. This finding is interesting to review because it can consider health workers in carrying out health promotion programs (Mohammadi et al., 2014).

One of the cores of empowerment activities is creating an independent learning process to make changes continuously. Change through learning, training, and education is often slow, but the changes that occur are more stable and sustainable. Empowerment of the health sector concerns independence in organizing to tackle disease risk factors, especially TB (Sukesi et al., 2017). It is also presented in the IHE method, where health cadres, namely PKK members, are given training to screen and find TB cases in the community. Training is one form of the educational process through training learning objectives or academic targets to gain learning experiences that eventually lead to changes in their behavior (Handayani et al., 2017).

Empowerment of Family Welfare groups is part of community groups that can play a strategic role in health. With their potential, PKK members play a role as health cadres in TB prevention. However, prevention is better than cure. Health cadres are a form of community participation in primary health care developed through integrated service centers, are people who are selected and provided with health skills through the public health centers. (Ratnasari et al., 2019). The role of cadres as activists or managers of primary health efforts in the community will develop and run optimally if cadres have competent credibility, namely the ability or skills in the health sector according to the training that is being attended at the public health center. Besides that, it has safety credibility, which is the trust of the community. Credibility is essential so that cadres can develop their roles to manage a primary health effort. Satisfaction arises when a cadre feels that his credibility has increased with his activities as a cadre (Sumartini, 2014).

It is hoped that PKK members who are members of this intervention can regularly contribute as motivators and motivators for other mothers in the early detection and discovery of TB cases in the community and their families. Thus, it can have a significant impact on reducing TB cases and

deaths. The involvement of PKK members in the empowerment program is considered very appropriate, given the considerable potential.

CONCLUSION

There are differences in scores before and after being given counseling and training with the IHE method. It can be seen from the increase in the value of all aspects of the pre-post test, including elements of knowledge and attitudes about TB disease. It is necessary to evaluate each stage of the activity implementation to be conveyed to community leaders to improve early detection activities to increase TB cases. Community leaders as influential people need to be involved in health education and disease prevention in their environment. This research requires further research so that this intervention can be applied in society. The IHE method has proven to effectively improve community attitudes, especially PKK members, towards TB disease and its prevention, but not with the knowledge aspect. So the development of this method is reasonable to do to be applied in the broader community and prevent other diseases in the community.

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Integrated Health Education (IHE) Methods: An Impact on Tuberculosis Health Education for the Sub-district of Sumowono Society, Indonesia

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Abstract

Semarang Regency has a low Tuberculosis (TB) case finding rate. Community empowerment is needed to assist in the handling and determination of TB cases. The IHE (Integrated Health Education) method as a method of health education was developed through counseling and training to support community empowerment. The purpose of this study was to determine the effect and effectiveness of the IHE method on the knowledge and attitudes of PKK (Empowerment of Family Welfare, in Bahasa: *Pemberdayaan Kesejahteraan Keluarga*) members regarding TB disease. This study used a quasi-experimental one-group pretest-posttest. The sample in this study was 25 active members of PKK in the Sumowono sub-district. Data were analyzed using the Wilcoxon test and N-Gran Score. The results showed an effect of the IHE method on the knowledge ($p = 0.034$) and attitudes ($p = 0.029$) of PKK members about TB disease. The IHE method effectively improved the attitudes of PKK members towards TB disease (mean: 61.43%). There was an increase in the knowledge and attitudes of PKK members about TB disease through health education using the IHE method. The development in this method is needed to be applied as a method of health education in various other diseases.

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INTRODUCTION

Globally, 95% of Tuberculosis (TB) cases and 98% of TB deaths occur. The World Health Organization (WHO) reported that in 2019, there were at least 10 million TB people with 1.2 million deaths due to TB (WHO, 2020). In Indonesia, the spread of pulmonary TB from year to year has increased by 2-5% (Kemenkes, 2019). One of the national TB strategies in TB control is case finding and TB treatment (Ruru et al., 2018). For the last ten years, Indonesia has experienced an average Case Detection Rate (CDR) increase. Even so this increase is still far from the WHO target of $\geq 90\%$. CDR of TB in Indonesia was reported at 64.5%. Of the 37 provinces in Indonesia, only two areas have achieved this target. Most of the regions have not reached, one of them is Central Java Province, which is reported to only have a CDR of 65.8% in 2019 (Kemenkes, 2019).

Semarang Regency is one of the areas in Central Java Province that has reported a decrease in case findings since the last two years. The CNR in 2019 increased to 1,024 per 100,000 populations, but in 2020 this figure has decreased to 640 per 100,000 populations. The decrease in TB case finding is explained, one of which is caused by the low active TB case finding in the community (Dinas Kesehatan Kabupaten Semarang, 2019).

The Ministry of Health of the Republic of Indonesia in the effort to control TB has initiated a strategy of finding suspected TB by passive intensive or active community-based (Kemenkes RI, 2014). However, the implementation of active community-based case finding has not been implemented well in various parts of Indonesia. As explained by Wahyuni et al., where a community-based surveillance system for finding suspected TB cases needs to be developed, considering that the low role of the community in active case finding will affect the low rate of TB case finding in the community. The existence of this community-based development aims to increase the role of the community in finding suspected TB cases in their environment (Wahyuni & Artanti, 2013).

Several significant efforts need to be made to achieve this target, including community empowerment to early detection and improving the quality of DOTS in all health facilities (Latifah, Rahayu, & Indrawati, 2018; Rahayu et al., 2015). Community empowerment efforts are carried out to increase public awareness of TB disease, its prevention and treatment so that the community can be actively involved in case finding (Arini, 2012; Kartika, 2015). The involvement of the community and TB patients in TB control will be effective if implemented by building partnerships between the health sector and the community. It will ensure the public and patients have the same information about TB, raise awareness about TB, and have mutual responsibility for TB control (Reviono, Sulaeman, & Murti, 2013).

Research conducted by Aulia et al. in 2020 in Makassar City, Indonesia, explained that the factor of low community participation in TB case finding is lack of knowledge about TB disease (Aulia, Batara, & Amelia, 2020). Low knowledge about TB is associated with high transmission and community delays in seeking TB treatment (Abebe & Demissie, 2012). Therefore, health education is the key to community empowerment in increasing public knowledge and awareness of TB and participating in its prevention (Wahyuni & Artanti, 2013).

The IHE (Integrated Health Education) method is a health education method needed to maximize community empowerment activities to increase public awareness in TB case finding. The method in the form of health education through community counseling, was developed with training on how to detect TB early in the community through Training of Trainers (ToT). The training is provided by health experts, especially in TB disease directly to the community. Providing outreach to the community is a health promotion media that is expected to have an impact on increasing public knowledge and awareness of TB disease. Furthermore, by conducting training through the Training of Trainer (ToT) it will be able to form a skilled community in actively finding suspected cases of TB in the community. In contrast to the previous study by Bisallah, et al

in 2018, which provided the provision of a health education intervention program regarding TB in HIV patients, it was effective in increasing their knowledge, attitudes, and behavior towards TB without any training to the patients (Bisallah et al., 2018).

One of the targets in community empowerment is the PKK (Family Empowerment and Welfare, in *Bahasa: Pemberdayaan dan Kesejahteraan Keluarga*) driving team in one area of Semarang Regency, namely, the Sumowono sub-district. Based on a preliminary study at the Sumowono Health Center, it was reported that TB case findings in 2020 were only 43 TB suspects found in 2020 and decreased from 2019 which was 97 TB suspects. Community involvement, especially in finding suspected TB cases, has not been carried out in Sumowono, which is a factor in the low TB case finding in the community. By empowering the PKK members through the IHE method, because one aspect of the PKK program is the health sector, it will be able to increase the knowledge of the PKK team and its role in the TB case finding program in the Sumowono area, Semarang Regency so that the TB case finding rate will be able to reach the target. Thus, this study aims to determine the effect and effectiveness of the Integrated Health Education (IHE) method on the knowledge and attitudes of PKK driving team about TB to increase TB case finding, especially in Sumowono District, Semarang Regency.

METHOD

This type of research was a quasi-experimental research design with a One Group Pre-test Post-test. The study was started from May to August and was conducted in Sumowono District. The population in this research was 25 women who were members of the PKK in the region. The sampling technique used total sampling so that all PKK members became samples in this experiment. The criteria including being active members of the PKK and having agreed to participate in this research.

The Integrated Health Education (IHE) method was an intervention method provided to PKK members through counseling activities about TB disease, prevention and early detection of TB, and training to find cases in the community. The data collection process used a questionnaire as a pre-test and post-test instrument containing questions about knowledge and attitudes about TB disease, prevention, and early detection. Retrieval of data through a pre-posttest questionnaire aims to determine the description and influence of the IHE method to increase the knowledge and attitudes of PKK members in Sumowono about TB disease, prevention, and how to detect TB early. The media used during outreach and training uses videos, demo tools, and a pocketbook for TB early detection.

Data were analyzed using the data normality test to determine the distribution of data. The test results proved that the data were not normally distributed, so the Wilcoxon test analysis was carried out to assess the effect of the IHE method on the knowledge and attitudes of PKK members regarding TB disease and the N-Gain Score test to determine the effectiveness of the technique.

RESULT AND DISCUSSION

Data from the pre-posttest results was tested by the data normality test to determine whether the data distribution was normal or not. The test results are presented in Table 1 below.

Table 1. The results of the normality test of the pre-test and post-test data on the knowledge and attitudes of PKK members in the Sumowono sub-district about TB disease (n=25)

Variable	<i>p-value</i>
Knowledge	
<i>Pre-test</i>	<0.001
<i>Post-test</i>	<0.001

Attitudes

<i>Pre-test</i>	<0.001
<i>Post-test</i>	<0.001

*pvalue>0.05 = normally distributed data

The data normality test results found that the pre-test p-value of each variable, both knowledge, and attitude, had a value of <0.001. Likewise, the post-test has a p-value of <0.001. So, this result can be concluded that the pre-post test data has an abnormal data distribution (p<0.05). Therefore, further data analysis to determine the effect of IHE media on increasing the knowledge and attitudes of PKK members about TB disease using the Wilcoxon test.

Table 2. The effect of the IHE method intervention on the knowledge and attitudes of PKK members in Sumowono sub-district about TB (N=25)

Variable	Mean	SD	Median	Ranks (N=25)			p-value
				Negative	Positive	Ties	
Knowledge							
<i>Pre-test</i>	4.80	0.41	5.00				
<i>Post-test</i>	5.04	0.35	5.00	1	7	17	0.034
Attitudes							
<i>Pre-test</i>	5.40	0.65	5.00				
<i>Post-test</i>	5.76	0.52	6.00	2	9	14	0.029

*p-value<0.05 = significant
SD= standard deviation

The analysis results in Table 2 report that the average value of knowledge before IHE intervention is 4.80 (SD: 0.41). After the intervention, IHE increased to 5.04 (SD: 0.35). This increase explains that the provision of intervention provides a change in the knowledges core to be higher. It is also evidenced by the results of the p-value at the knowledge level of 0.034. So it means that there is an effect of the provision of IHE method intervention on the level of knowledge of PKK members in the Sumowono sub-district about TB disease. A total of 7 PKK members experienced an increase in knowledge scores after being given counseling and training through the IHE method and 17 people did not experience an increase in knowledge or fixed knowledge scores.

An increase in the mean value also occurred in the attitudes of PKK members towards TB disease. The mean value of attitude before being given the IHE method was 5.40, and then after being given the IHE method, it was 5.76. The result of the p-value is 0.029 (<0.05), which means that there is an effect of the IHE method intervention on the attitudes of PKK members about TB disease. The decrease in attitude scores after being given counseling about TB and its prevention as well as TB screening training through the IHE method was experienced by 2 PKK members as respondents in this study. However, 9 out of 25 people experienced an increase in their attitude towards TB after being given the IHE method.

To determine the effectiveness of the IHE method on the knowledge and attitudes of TB cadres about TB disease, the N-Gain Score test was performed. As seen in table 3, it is reported that the mean value of knowledge is 14%. In the category of effectiveness interpretation of N-Gain based on Hake (1999), if the mean value is <40%, it is categorized as an ineffective intervention. So, the IHE method was not effective in increasing the knowledge of PKK members in the Sumowono sub-district about TB disease, prevention, treatment, and early detection methods in the community.

Table 3. The effectiveness of the IHE method in increasing the knowledge and attitudes of PKK members in the Sumowono sub-district about TB disease (N=25)

Variable	N-Gain Score (%)		
	Mean	Max	Min
Knowledge	14.00	100	-100
Attitudes	61.54	100	-100

In contrast to the knowledge variable, the attitude variable presented in table 3 shows a mean value of 61.54%. This value is categorized as a moderately effective intervention (range: 56% - 75%). Therefore, the IHE method is an effective method to improve the attitudes of PKK members in the Sumowono sub-district towards TB disease, prevention, treatment, and early detection methods in the community.

At the level of knowledge, known that PKK members had good knowledge on the pre-test and improved better with the post-test increase in the knowledge level scores. Following the research objectives, namely, increasing public knowledge and understanding of information on TB disease. In line with research conducted in the City of Mataram in 2014, the provision of TB information and training to health cadres had a significant relationship with the role of health cadres in TB case detection (Sumartini, 2014). An individual will increase knowledge when he gets exposed to some information, increased understanding, and more information obtained and captured through sensing (Sandha & Sari, 2017).

In this intervention, increased knowledge of PKK members in Sumowono, Semarang Regency was obtained after counseling and training with the IHE method. The IHE method in education through health counseling and training as a medium for health promotion has been proven to affect public knowledge in Sumowono. In line with Jatmiko's 2018 research conducted in the City of Surakarta, the varied lecture methods have increased general knowledge about TB disease. According to him, this method is easier to do and readily accepted by the community, especially with the involvement of experts in providing this education (Jatmiko, Romanda, & Hidayatullah, 2018).

The attitude variable also shows an increase due to the influence of the IHE method. The behavior of suspicious discovery by good cadres can be caused by knowledge, attitudes, training, motivation, and support from program managers. Exposure to information will affect the openness and knowledge of a person's thinking. If the information is considered good, then consciously or unconsciously, it will influence someone to behave and act. As per the report of Saraswati's research in Semarang City in 2014, a person exposed to information is 2.2 times at risk of doing good health practices (Saraswati, 2014). Likewise, with research by Raude et al. in Southeastern France in 2012, where participants who have good knowledge of disease prevention behaviors will have a better ability to take disease prevention measures (Raude et al., 2012). This result about health education was also proven in a study at Karanganyar Health Center by Ratnasari et al. Their study indicated that health education through the question and answer lecture method and guide books can improve TB disease prevention behavior (D. Ratnasari, Budi, & Sakti, 2015).

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It is hoped that PKK members who are members of this intervention can regularly contribute as motivators and motivators for other mothers in the early detection and discovery of TB cases in the community and their families. Thus, it can have a significant impact on reducing TB cases and deaths. The involvement of PKK members in the empowerment program is considered very appropriate, given the considerable potential.

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There are differences in scores before and after being given counseling and training with the IHE method. It can be seen from the increase in the value of all aspects of the pre-post test, including elements of knowledge and attitudes about TB disease. It is necessary to evaluate each stage of the activity implementation to be conveyed to community leaders to improve early detection activities to increase TB cases. Community leaders as influential people need to be involved in health education and disease prevention in their environment. This research requires further research so that this intervention can be applied in society. The IHE method has proven to effectively improve community attitudes, especially PKK members, towards TB disease and its prevention, but not with the knowledge aspect. So, the development of this method is reasonable to do to be applied in the broader community and prevent other diseases in the community.

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Here are some things that are different from the last revision of our article:

- Context of Abstract
- Table 2 (in edited article the p-value column is missing, there should be a p-value in table 2, and this is very important)
- The title should be: Integrated Health Education (IHE) Method: An Impact on Tuberculosis Health Education for the Sub-district of Sumowono Society, Indonesia

Here we also attach the latest revision of our article.
Thank you.

Best regards,
Sri Ratna Rahayu, (dr., M.Kes., Ph.D)

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Integrated Health Education (IHE) Methods: An Impact on Tuberculosis Health Education for the Sub-district of Sumowono Society, Indonesia

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Abstract

Tuberculosis (TB) case results in Semarang Regency is still in the low category. The IHE method was developed through counseling and training to support the community empowerment needed in assisting TB cases handling and determination. This study aims to determine the IHE method's effect and effectiveness on the knowledge and attitudes of Pemberdayaan Kesejahteraan Keluarga (Empowerment of Family Welfare; PKK) members regarding TB disease. A quasi-experimental one-group pretest-posttest design and a sample size of 25 active PKK members in the Sumowono sub-district were used. Then, the data were analyzed using the Wilcoxon test and N-Gran Score. The results showed the IHE method's effect on PKK members knowledge and attitudes regarding TB disease with P-values of 0.034 and 0.029, respectively. The IHE method effectively improved the PKK members attitudes towards TB disease (mean= 61.43%). There was an increase in the knowledge and attitudes of PKK mothers about TB disease through health education using the IHE method. The development in IHE is needed to be applied as a health education method in various other diseases.

INTRODUCTION

Globally, 95% of Tuberculosis (TB) cases and 98% of TB deaths occur. The World Health Organization (WHO) reported that in 2019, there were at least 10 million TB people with 1.2 million deaths due to TB (WHO, 2020). Indonesian Health Ministry recorded the spread of pulmonary TB from year to year has increased by 2-5%. One of the national

TB strategies in TB control is case finding and TB treatment (Ruru et al., 2018). For the last ten years, Indonesia has experienced an average Case Detection Rate (CDR) increase. Even so this increase is still far from the WHO target of $\geq 90\%$. CDR of TB in Indonesia was reported at 64.5%. Of the 37 provinces in Indonesia, only two areas have achieved this target. Most of the regions have not reached, one of

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them is Central Java Province, which is reported to only have a CDR of 65.8% in 2019.

Semarang Regency is one of the areas in Central Java Province that has reported a decrease in case findings since the last two years. Health Office of Semarang Regency recorded the CNR in 2019 increased to 1,024 per 100,000 populations, but in 2020 this figure has decreased to 640 per 100,000 populations. The decrease in TB case finding is explained, one of which is caused by the low active TB case finding in the community.

The Ministry of Health of the Republic of Indonesia in the effort to control TB has initiated a strategy of finding suspected TB by passive intensive or active community-based (Indonesian Health Ministry, 2014). However, the implementation of active community-based case finding has not been implemented well in various parts of Indonesia. As explained by Wahyuni & Artanti., where a community-based surveillance system for finding suspected TB cases needs to be developed, considering that the low role of the community in active case finding will affect the low rate of TB case finding in the community. The existence of this community-based development aims to increase the role of the community in finding suspected TB cases in their environment (Wahyuni & Artanti, 2013).

Several significant efforts need to be made to achieve this target, including community empowerment to early detection and improving the quality of DOTS in all health facilities (Latifah et al., 2018; Rahayu et al., 2015). Community empowerment efforts are carried out to increase public awareness of TB disease, its prevention and treatment so that the community can be actively involved in case finding (Rita et al., 2019; Kartika, 2015). The involvement of the community and TB patients in TB control will be effective if implemented by building partnerships between the health sector and the community. It will ensure the public and patients have the same information about TB, raise awareness about TB, and have mutual responsibility for TB control (Reviono et al., 2013).

Research conducted by Aulia et al. (2020) in Makassar City, Indonesia, explained that the factor of low community participation in TB case finding is lack of knowledge about TB disease (Aulia et al., 2020). Research conducted in Semarang City, Indonesia, also explained that knowledge and skills about TB and TB control will increase the community participation (Umiasih, & Handayani, 2018). Low knowledge about TB is associated with high transmission and community delays in seeking TB treatment (Narasimhan, 2013). Therefore, health education is the key to community empowerment in increasing public knowledge and awareness of TB and partici-

pating in its prevention (Wahyuni & Artanti, 2013).

The IHE (Integrated Health Education) method is a health education method needed to maximize community empowerment activities to increase public awareness in TB case finding. The method in the form of health education through community counseling, was developed with training on how to detect TB early in the community through Training of Trainers (ToT). The training is provided by health experts, especially in TB disease directly to the community. Providing outreach to the community is a health promotion media that is expected to have an impact on increasing public knowledge and awareness of TB disease. Furthermore, by conducting training through the Training of Trainer (ToT) it will be able to form a skilled community in actively finding suspected cases of TB in the community. In contrast to the previous study by Bisallah et al. in 2018, which provided the provision of a health education intervention program regarding TB in HIV patients, it was effective in increasing their knowledge, attitudes, and behavior towards TB without any training to the patients (Bisallah et al., 2018).

One of the targets in community empowerment is the PKK (Family Empowerment and Welfare, in *Bahasa: Pemberdayaan dan Kesejahteraan Keluarga*) driving team in one area of Semarang Regency, namely, the Sumowono sub-district. Based on a preliminary study at the Sumowono Health Center, it was reported that TB case findings in 2020 were only 43 TB suspects found in 2020 and decreased from 2019 which was 97 TB suspects. Community involvement, especially in finding suspected TB cases, has not been carried out in Sumowono, which is a factor in the low TB case finding in the community. By empowering the PKK members through the IHE method, because one aspect of the PKK program is the health sector, it will be able to increase the knowledge of the PKK team and its role in the TB case finding program in the Sumowono area, Semarang Regency so that the TB case finding rate will be able to reach the target. Thus, this study aims to determine the effect and effectiveness of the Integrated Health Education (IHE) method on the knowledge and attitudes of PKK driving team about TB to increase TB case finding, especially in Sumowono District, Semarang Regency.

METHODS

This type of research was a quasi-experimental research design with a One Group Pre-test Post-test. The study was started from May to August and was conducted in Sumowono District. The population in this research was 25 women who were members of the PKK in the region. The sampling

technique used total sampling so that all PKK members became samples in this experiment. The criteria including being active members of the PKK and having agreed to participate in this research.

The Integrated Health Education (IHE) method was an intervention method provided to PKK members through counseling activities about TB disease, prevention and early detection of TB, and training to find cases in the community. The data collection process used a questionnaire as a pre-test and post-test instrument containing questions about knowledge and attitudes about TB disease, prevention, and early detection. Retrieval of data through a pre-posttest questionnaire aims to determine the description and influence of the IHE method to increase the knowledge and attitudes of PKK members in Sumowono about TB disease, prevention, and how to detect TB early. The media used during outreach and training uses videos, demo tools, and a pocketbook for TB early detection.

Data were analyzed using the data normality test to determine the distribution of data. The test results proved that the data were not normally distributed, so the Wilcoxon test analysis was carried out to assess the effect of the IHE method on the knowledge and attitudes of PKK members regarding TB disease and the N-Gain Score test to determine the effectiveness of the technique.

RESULTS AND DISCUSSION

Data from the pre-posttest results was tested by the data normality test to determine whether the data distribution was normal or not. The test results are presented in Table 1 below.

The data normality test results found that the pre-test p-value of each variable, both knowledge, and attitude, had a value of <0.001. Likewise, the post-test has a p-value of <0.001. So, this result can be concluded that the pre-post test data has an abnormal data distribution ($p < 0.05$). Therefore, further data analysis to determine the effect of IHE media on increasing the knowledge and attitudes of

PKK members about TB disease using the Wilcoxon test.

The analysis results in Table 2 report that the average value of knowledge before IHE intervention is 4.80 (SD: 0.41). After the intervention, IHE increased to 5.04 (SD: 0.35). This increase explains that the provision of intervention provides a change in the knowledges core to be higher. It is also evidenced by the results of the p-value at the knowledge level of 0.034. So it means that there is an effect of the provision of IHE method intervention on the level of knowledge of PKK members in the Sumowono sub-district about TB disease. A total of 7 PKK members experienced an increase in knowledge scores after being given counseling and training through the IHE method and 17 people did not experience an increase in knowledge or fixed knowledge scores.

An increase in the mean value also occurred in the attitudes of PKK members towards TB disease. The mean value of attitude before being given the IHE method was 5.40, and then after being given the IHE method, it was 5.76. The result of the p-value is 0.029 (< 0.05), which means that there is an effect of the IHE method intervention on the attitudes of PKK members about TB disease. The decrease in attitude scores after being given counseling about TB and its prevention as well as TB screening training through the IHE method was experienced by 2 PKK members as respondents in this study. However, 9 out of 25 people experienced an increase in their attitude towards TB after being given the IHE method.

To determine the effectiveness of the IHE method on the knowledge and attitudes of TB cadres about TB disease, the N-Gain Score test was performed. As seen in table 3, it is reported that the mean value of knowledge is 14%. In the category of effectiveness interpretation of N-Gain based on Hake (1999), if the mean value is <40%, it is categorized as an ineffective intervention. So, the IHE method was not effective in increasing the knowledge of PKK

Table 1. The results of the normality test of the pre-test and post-test data on the knowledge and attitudes of PKK members in the Sumowono sub-district about TB disease (n=25)

Variable	p-value
Knowledge	
Pre-test	<0.001
Post-test	<0.001
Attitudes	
Pre-test	<0.001
Post-test	<0.001

*p value > 0.05 = normally distributed data

Table 2. The effect of the IHE method intervention on the knowledge and attitudes of PKK members in Sumowono sub-district about TB (N=25)

Variable	Mean	SD	Median	Ranks (N=25)		
				Negative	Positive	Ties
Knowledge						
Pre-test	4.80	0.41	5.00			
Post-test	5.04	0.35	5.00	1	7	17
Attitudes						
Pre-test	5.40	0.65	5.00			
Post-test	5.76	0.52	6.00	2	9	14

*p-value<0.05 = significant

members in the Sumowono sub-district about TB disease, prevention, treatment, and early detection methods in the community.

In contrast to the knowledge variable, the attitude variable presented in table 3 shows a mean value of 61.54%. This value is categorized as a moderately effective intervention (range: 56% - 75%). Therefore, the IHE method is an effective method to improve the attitudes of PKK members in the Sumowono sub-district towards TB disease, prevention, treatment, and early detection methods in the community.

At the level of knowledge, known that PKK members had good knowledge on the pre-test and improved better with the post-test increase in the knowledge level scores. Following the research objectives, namely, increasing public knowledge and understanding of information on TB disease. In line with research conducted in the City of Mataram in 2014, the provision of TB information and training to health cadres had a significant relationship with the role of health cadres in TB case detection (Sumartini, 2014). An individual will increase knowledge when he gets exposed to some information, increased understanding, and more information obtained and captured through sensing (Sandha & Sari, 2017).

In this intervention, increased knowledge of PKK members in Sumowono, Semarang Regency was obtained after counseling and training with the IHE method. The IHE method in education through health counseling and training as a medium for health promotion has been proven to affect public

knowledge in Sumowono. In line with Jatmiko's 2018 research conducted in the City of Surakarta, the varied lecture methods have increased general knowledge about TB disease. According to him, this method is easier to do and readily accepted by the community, especially with the involvement of experts in providing this education (Jatmiko, Romanda, & Hidayatullah, 2018).

The attitude variable also shows an increase due to the influence of the IHE method. The behavior of suspicious discovery by good cadres can be caused by knowledge, attitudes, training, motivation, and support from program managers. Exposure to information will affect the openness and knowledge of a person's thinking. If the information is considered good, then consciously or unconsciously, it will influence someone to behave and act. As per the report of Saraswati's research in Semarang City in 2014, a person exposed to information is 2.2 times at risk of doing good health practices (Saraswati, 2014). Likewise, with research by Raude et al. in Southeastern France in 2012, where participants who have good knowledge of disease prevention behaviors will have a better ability to take disease prevention measures (Raude et al., 2012). This result about health education was also proven in a study at Karanganyar Health Center by Ratnasari et al. Their study indicated that health education through the question and answer lecture method and guide books can improve TB disease prevention behavior (Ratnasari et al., 2015).

Health education is one of the keys and main elements in health promotion efforts. Health

Table 3. The effectiveness of the IHE method in increasing the knowledge and attitudes of PKK members in the Sumowono sub-district about TB disease (N=25)

Variable	N-Gain Score (%)		
	Mean	Max	Min
Knowledge	14.00	100	-100
Attitudes	61.54	100	-100

education aims to increase awareness, broaden horizons, acquire and improve skills, and shape attitudes in health for individuals and groups (Hahn & Truman, 2015). Research in Iran suggests that the provision of TB health education interventions should focus on the culture and beliefs of a society. This focus aims to make health education readily accepted by the community to maintain a positive attitude. In addition, the involvement of experts or competent people who have the same beliefs in conducting health education is considered more effective. This finding is interesting to review because it can consider health workers in carrying out health promotion programs (Mohammadi et al., 2014).

One of the cores of empowerment activities is creating an independent learning process to make changes continuously. Change through learning, training, and education is often slow, but the changes that occur are more stable and sustainable. Empowerment of the health sector concerns independence in organizing to tackle disease risk factors, especially TB (Sukei et al, 2017). It is also presented in the IHE method, where healthcadres, namely PKK members, are given training to screen and find TB cases in the community. Training is one form of the educational process through training learning objectives or academic targets to gain learning experiences that eventually lead to changes in their behavior (Handayani et al., 2017).

Empowerment of Family Welfare groups is part of community groups that can play a strategic role in health. With their potential, PKK members play a role as health cadres in TB prevention. However, prevention is better than cure. Health cadres are a form of community participation in primary health care developed through integrated service centers, are people who are selected and provided with health skills through the public health centers. (Ratnasari et al., 2019). The role of cadres as activists or managers of primary health efforts in the community will develop and run optimally if cadres have competent credibility, namely the ability or skills in the health sector according to the training that is being attended at the public health center. Besides that, it has safety credibility, which is the trust of the community. Credibility is essential so that cadres can develop their roles to manage a primary health effort. Satisfaction arises when a cadre feels that his credibility has increased with his activities as a cadre (Sumartini, 2014).

It is hoped that PKK members who are members of this intervention can regularly contribute as motivators and motivators for other mothers in the early detection and discovery of TB cases in the community and their families. Thus, it can have a significant impact on reducing TB cases

and deaths. The involvement of PKK members in the empowerment program is considered very appropriate, given the considerable potential.

CONCLUSION

There are differences in scores before and after being given counseling and training with the IHE method. It can be seen from the increase in the value of all aspects of the pre-post test, including elements of knowledge and attitudes about TB disease. It is necessary to evaluate each stage of the activity implementation to be conveyed to community leaders to improve early detection activities to increase TB cases. Community leaders as influential people need to be involved in health education and disease prevention in their environment. This research requires further research so that this intervention can be applied in society. The IHE method has proven to effectively improve community attitudes, especially PKK members, towards TB disease and its prevention, but not with the knowledge aspect. So, the development of this method is reasonable to do to be applied in the broader community and prevent other diseases in the community.

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Thank you Mrs. Arum for editing the article, but I think there are any problems. The article that you have attached (edited article) is different from the last revision of our article that has been submitted to the UJPH.

Here are some things that are different from the last revision of our article:

- Context of Abstract
- Table 2 (in edited article the p-value column is missing, there should be a p-value in table 2, and this is very important)
- The title should be: Integrated Health Education (IHE) Method: An Impact on Tuberculosis Health Education for the Sub-district of Sumowono Society, Indonesia

Here we also attach the latest revision of our article.
Thank you.

Best regards,
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Integrated Health Education (IHE) Method: An Impact on Tuberculosis Health Education for the Sub-district of Sumowono Society, Indonesia

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Abstract

Semarang Regency has a low Tuberculosis (TB) case finding rate. Community empowerment is needed to assist in the handling and determination of TB cases. The IHE (Integrated Health Education) method as a method of health education was developed through counseling and training to support community empowerment. The purpose of this study was to determine the effect and effectiveness of the IHE method on the knowledge and attitudes of PKK (Empowerment of Family Welfare, in Bahasa: *Pemberdayaan Kesejahteraan Keluarga*) members regarding TB disease. This study used a quasi-experimental one-group pretest-posttest. The sample in this study was 25 active members of PKK in the Sumowono sub-district. Data were analyzed using the Wilcoxon test and N-Gran Score. The results showed an effect of the IHE method on the knowledge ($p = 0.034$) and attitudes ($p = 0.029$) of PKK members about TB disease. The IHE method effectively improved the attitudes of PKK members towards TB disease (mean: 61.43%). There was an increase in the knowledge and attitudes of PKK members about TB disease through health education using the IHE method. The development in this method is needed to be applied as a method of health education in various other diseases.

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INTRODUCTION

Globally, 95% of Tuberculosis (TB) cases and 98% of TB deaths occur. The World Health Organization (WHO) reported that in 2019, there were at least 10 million TB people with 1.2 million deaths due to TB (WHO, 2020). In Indonesia, the spread of pulmonary TB from year to year has increased by 2-5% (Kemenkes, 2019). One of the national TB strategies in TB control is case finding and TB treatment (Ruru et al., 2018). For the last ten years, Indonesia has experienced an average Case Detection Rate (CDR) increase. Even so this increase is still far from the WHO target of $\geq 90\%$. CDR of TB in Indonesia was reported at 64.5%. Of the 37 provinces in Indonesia, only two areas have achieved this target. Most of the regions have not reached, one of them is Central Java Province, which is reported to only have a CDR of 65.8% in 2019 (Kemenkes, 2019).

Semarang Regency is one of the areas in Central Java Province that has reported a decrease in case findings since the last two years. The CNR in 2019 increased to 1,024 per 100,000 populations, but in 2020 this figure has decreased to 640 per 100,000 populations. The decrease in TB case finding is explained, one of which is caused by the low active TB case finding in the community (Dinas Kesehatan Kabupaten Semarang, 2019).

The Ministry of Health of the Republic of Indonesia in the effort to control TB has initiated a strategy of finding suspected TB by passive intensive or active community-based (Kemenkes RI, 2014). However, the implementation of active community-based case finding has not been implemented well in various parts of Indonesia. As explained by Wahyuni et al., where a community-based surveillance system for finding suspected TB cases needs to be developed, considering that the low role of the community in active case finding will affect the low rate of TB case finding in the community. The existence of this community-based development aims to increase the role of the community in finding suspected TB cases in their environment (Wahyuni & Artanti, 2013).

Several significant efforts need to be made to achieve this target, including community empowerment to early detection and improving the quality of DOTS in all health facilities (Latifah, Rahayu, & Indrawati, 2018; Rahayu et al., 2015). Community empowerment efforts are carried out to increase public awareness of TB disease, its prevention and treatment so that the community can be actively involved in case finding (Arini, 2012; Kartika, 2015). The involvement of the community and TB patients in TB control will be effective if implemented by building partnerships between the health sector and the community. It will ensure the public and patients have the same information about TB, raise awareness about TB, and have mutual responsibility for TB control (Reviono, Sulaeman, & Murti, 2013).

Research conducted by Aulia et al. in 2020 in Makassar City, Indonesia, explained that the factor of low community participation in TB case finding is lack of knowledge about TB disease (Aulia, Batara, & Amelia, 2020). Low knowledge about TB is associated with high transmission and community delays in seeking TB treatment (Abebe & Demissie, 2012). Therefore, health education is the key to community empowerment in increasing public knowledge and awareness of TB and participating in its prevention (Wahyuni & Artanti, 2013).

The IHE (Integrated Health Education) method is a health education method needed to maximize community empowerment activities to increase public awareness in TB case finding. The method in the form of health education through community counseling, was developed with training on how to detect TB early in the community through Training of Trainers (ToT). The training is provided by health experts, especially in TB disease directly to the community. Providing outreach to the community is a health promotion media that is expected to have an impact on increasing public knowledge and awareness of TB disease. Furthermore, by conducting training through the Training of Trainer (ToT) it will be able to form a skilled community in actively finding suspected cases of TB in the community. In contrast to the previous study by Bisallah, et al

in 2018, which provided the provision of a health education intervention program regarding TB in HIV patients, it was effective in increasing their knowledge, attitudes, and behavior towards TB without any training to the patients (Bisallah et al., 2018).

One of the targets in community empowerment is the PKK (Family Empowerment and Welfare, in *Bahasa: Pemberdayaan dan Kesejahteraan Keluarga*) driving team in one area of Semarang Regency, namely, the Sumowono sub-district. Based on a preliminary study at the Sumowono Health Center, it was reported that TB case findings in 2020 were only 43 TB suspects found in 2020 and decreased from 2019 which was 97 TB suspects. Community involvement, especially in finding suspected TB cases, has not been carried out in Sumowono, which is a factor in the low TB case finding in the community. By empowering the PKK members through the IHE method, because one aspect of the PKK program is the health sector, it will be able to increase the knowledge of the PKK team and its role in the TB case finding program in the Sumowono area, Semarang Regency so that the TB case finding rate will be able to reach the target. Thus, this study aims to determine the effect and effectiveness of the Integrated Health Education (IHE) method on the knowledge and attitudes of PKK driving team about TB to increase TB case finding, especially in Sumowono District, Semarang Regency.

METHOD

This type of research was a quasi-experimental research design with a One Group Pre-test Post-test. The study was started from May to August and was conducted in Sumowono District. The population in this research was 25 women who were members of the PKK in the region. The sampling technique used total sampling so that all PKK members became samples in this experiment. The criteria including being active members of the PKK and having agreed to participate in this research.

The Integrated Health Education (IHE) method was an intervention method provided to PKK members through counseling activities about TB disease, prevention and early detection of TB, and training to find cases in the community. The data collection process used a questionnaire as a pre-test and post-test instrument containing questions about knowledge and attitudes about TB disease, prevention, and early detection. Retrieval of data through a pre-posttest questionnaire aims to determine the description and influence of the IHE method to increase the knowledge and attitudes of PKK members in Sumowono about TB disease, prevention, and how to detect TB early. The media used during outreach and training uses videos, demo tools, and a pocketbook for TB early detection.

Data were analyzed using the data normality test to determine the distribution of data. The test results proved that the data were not normally distributed, so the Wilcoxon test analysis was carried out to assess the effect of the IHE method on the knowledge and attitudes of PKK members regarding TB disease and the N-Gain Score test to determine the effectiveness of the technique.

RESULT AND DISCUSSION

Data from the pre-posttest results was tested by the data normality test to determine whether the data distribution was normal or not. The test results are presented in Table 1 below.

Table 1. The results of the normality test of the pre-test and post-test data on the knowledge and attitudes of PKK members in the Sumowono sub-district about TB disease (n=25)

Variable	<i>p-value</i>
Knowledge	
<i>Pre-test</i>	<0.001
<i>Post-test</i>	<0.001

Attitudes

<i>Pre-test</i>	<0.001
<i>Post-test</i>	<0.001

*pvalue>0.05 = normally distributed data

The data normality test results found that the pre-test p-value of each variable, both knowledge, and attitude, had a value of <0.001. Likewise, the post-test has a p-value of <0.001. So, this result can be concluded that the pre-post test data has an abnormal data distribution (p<0.05). Therefore, further data analysis to determine the effect of IHE media on increasing the knowledge and attitudes of PKK members about TB disease using the Wilcoxon test.

Table 2. The effect of the IHE method intervention on the knowledge and attitudes of PKK members in Sumowono sub-district about TB (N=25)

Variable	Mean	SD	Median	Ranks (N=25)			p-value
				Negative	Positive	Ties	
Knowledge							
<i>Pre-test</i>	4.80	0.41	5.00				
<i>Post-test</i>	5.04	0.35	5.00	1	7	17	0.034
Attitudes							
<i>Pre-test</i>	5.40	0.65	5.00				
<i>Post-test</i>	5.76	0.52	6.00	2	9	14	0.029

*p-value<0.05 = significant
SD= standard deviation

The analysis results in Table 2 report that the average value of knowledge before IHE intervention is 4.80 (SD: 0.41). After the intervention, IHE increased to 5.04 (SD: 0.35). This increase explains that the provision of intervention provides a change in the knowledges core to be higher. It is also evidenced by the results of the p-value at the knowledge level of 0.034. So it means that there is an effect of the provision of IHE method intervention on the level of knowledge of PKK members in the Sumowono sub-district about TB disease. A total of 7 PKK members experienced an increase in knowledge scores after being given counseling and training through the IHE method and 17 people did not experience an increase in knowledge or fixed knowledge scores.

An increase in the mean value also occurred in the attitudes of PKK members towards TB disease. The mean value of attitude before being given the IHE method was 5.40, and then after being given the IHE method, it was 5.76. The result of the p-value is 0.029 (<0.05), which means that there is an effect of the IHE method intervention on the attitudes of PKK members about TB disease. The decrease in attitude scores after being given counseling about TB and its prevention as well as TB screening training through the IHE method was experienced by 2 PKK members as respondents in this study. However, 9 out of 25 people experienced an increase in their attitude towards TB after being given the IHE method.

To determine the effectiveness of the IHE method on the knowledge and attitudes of TB cadres about TB disease, the N-Gain Score test was performed. As seen in table 3, it is reported that the mean value of knowledge is 14%. In the category of effectiveness interpretation of N-Gain based on Hake (1999), if the mean value is <40%, it is categorized as an ineffective intervention. So, the IHE method was not effective in increasing the knowledge of PKK members in the Sumowono sub-district about TB disease, prevention, treatment, and early detection methods in the community.

Table 3. The effectiveness of the IHE method in increasing the knowledge and attitudes of PKK members in the Sumowono sub-district about TB disease (N=25)

Variable	N-Gain Score (%)		
	Mean	Max	Min
Knowledge	14.00	100	-100
Attitudes	61.54	100	-100

In contrast to the knowledge variable, the attitude variable presented in table 3 shows a mean value of 61.54%. This value is categorized as a moderately effective intervention (range: 56% - 75%). Therefore, the IHE method is an effective method to improve the attitudes of PKK members in the Sumowono sub-district towards TB disease, prevention, treatment, and early detection methods in the community.

At the level of knowledge, known that PKK members had good knowledge on the pre-test and improved better with the post-test increase in the knowledge level scores. Following the research objectives, namely, increasing public knowledge and understanding of information on TB disease. In line with research conducted in the City of Mataram in 2014, the provision of TB information and training to health cadres had a significant relationship with the role of health cadres in TB case detection (Sumartini, 2014). An individual will increase knowledge when he gets exposed to some information, increased understanding, and more information obtained and captured through sensing (Sandha & Sari, 2017).

In this intervention, increased knowledge of PKK members in Sumowono, Semarang Regency was obtained after counseling and training with the IHE method. The IHE method in education through health counseling and training as a medium for health promotion has been proven to affect public knowledge in Sumowono. In line with Jatmiko's 2018 research conducted in the City of Surakarta, the varied lecture methods have increased general knowledge about TB disease. According to him, this method is easier to do and readily accepted by the community, especially with the involvement of experts in providing this education (Jatmiko, Romanda, & Hidayatullah, 2018).

The attitude variable also shows an increase due to the influence of the IHE method. The behavior of suspicious discovery by good cadres can be caused by knowledge, attitudes, training, motivation, and support from program managers. Exposure to information will affect the openness and knowledge of a person's thinking. If the information is considered good, then consciously or unconsciously, it will influence someone to behave and act. As per the report of Saraswati's research in Semarang City in 2014, a person exposed to information is 2.2 times at risk of doing good health practices (Saraswati, 2014). Likewise, with research by Raude et al. in Southeastern France in 2012, where participants who have good knowledge of disease prevention behaviors will have a better ability to take disease prevention measures (Raude et al., 2012). This result about health education was also proven in a study at Karanganyar Health Center by Ratnasari et al. Their study indicated that health education through the question and answer lecture method and guide books can improve TB disease prevention behavior (D. Ratnasari, Budi, & Sakti, 2015).

Health education is one of the keys and main elements in health promotion efforts. Health education aims to increase awareness, broaden horizons, acquire and improve skills, and shape attitudes in health for individuals and groups (Hahn & Truman, 2015). Research in Iran suggests that the provision of TB health education interventions should focus on the culture and beliefs of a society. This focus aims to make health education readily accepted by the community to maintain a positive attitude. In addition, the involvement of experts or competent people who have the same beliefs in conducting health education is considered more effective. This finding is interesting to

review because it can consider health workers in carrying out health promotion programs (Mohammadi, Tavafian, Ghofranipoor, & Amin-Shokravi, 2014).

One of the cores of empowerment activities is creating an independent learning process to make changes continuously. Change through learning, training, and education is often slow, but the changes that occur are more stable and sustainable. Empowerment of the health sector concerns independence in organizing to tackle disease risk factors, especially TB (Sukei, Sulistyawati, & Mulasari, 2017). It is also presented in the IHE method, where healthcadres, namely PKK members, are given training to screen and find TB cases in the community. Training is one form of the educational process through training learning objectives or academic targets to gain learning experiences that eventually lead to changes in their behavior (Handayani, Raharjo, Nugroho, & Hermawati, 2017).

Empowerment of Family Welfaregroups is part of community groups that can play a strategic role in health. With their potential, PKK members play a role as health cadres in TB prevention. However, prevention is better than cure. Health cadres are a form of community participation in primary health care developed through integrated service centers, are people who are selected and provided with health skills through the public health centers. (Ratnasari et al., 2019). The role of cadres as activists or managers of primary health efforts in the community will develop and run optimally if cadres have competent credibility, namely the ability or skills in the health sector according to the training that is being attended at the public health center. Besides that, it has safety credibility, which is the trust of the community. Credibility is essential so that cadres can develop their roles to manage a primary health effort. Satisfaction arises when a cadre feels that his credibility has increased with his activities as a cadre (Sumartini, 2014).

It is hoped that PKK members who are members of this intervention can regularly contribute as motivators and motivators for other mothers in the early detection and discovery of TB cases in the community and their families. Thus, it can have a significant impact on reducing TB cases and deaths. The involvement of PKK members in the empowerment program is considered very appropriate, given the considerable potential.

CONCLUSION

There are differences in scores before and after being given counseling and training with the IHE method. It can be seen from the increase in the value of all aspects of the pre-post test, including elements of knowledge and attitudes about TB disease. It is necessary to evaluate each stage of the activity implementation to be conveyed to community leaders to improve early detection activities to increase TB cases. Community leaders as influential people need to be involved in health education and disease prevention in their environment. This research requires further research so that this intervention can be applied in society. The IHE method has proven to effectively improve community attitudes, especially PKK members, towards TB disease and its prevention, but not with the knowledge aspect. So, the development of this method is reasonable to do to be applied in the broader community and prevent other diseases in the community.

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Integrated Health Education (IHE) Method: An Impact on Tuberculosis Health Education for the Sub-district of Sumowono Society, Indonesia

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Abstract

Tuberculosis (TB) case results in Semarang Regency is still in the low category. The IHE method was developed through counseling and training to support the community empowerment needed in assisting TB cases handling and determination. This study aims to determine the IHE method's effect and effectiveness on the knowledge and attitudes of Pemberdayaan Kesejahteraan Keluarga (Empowerment of Family Welfare; PKK) members regarding TB disease. A quasi-experimental one-group pretest-posttest design and a sample size of 25 active PKK members in the Sumowono sub-district were used. Then, the data were analyzed using the Wilcoxon test and N-Gran Score. The results showed the IHE method's effect on PKK members knowledge and attitudes regarding TB disease with P-values of 0.034 and 0.029, respectively. The IHE method effectively improved the PKK members attitudes towards TB disease (mean= 61.43%). There was an increase in the knowledge and attitudes of PKK mothers about TB disease through health education using the IHE method. The development in IHE is needed to be applied as a health education method in various other diseases.

INTRODUCTION

Globally, 95% of Tuberculosis (TB) cases and 98% of TB deaths occur. The World Health Organization (WHO) reported that in 2019, there were at least 10 million TB people with 1.2 million deaths due to TB (WHO, 2020). Indonesian Health Ministry recorded the spread of pulmonary TB from year to year has increased by 2-5%. One of the national

TB strategies in TB control is case finding and TB treatment (Ruru et al., 2018). For the last ten years, Indonesia has experienced an average Case Detection Rate (CDR) increase. Even so this increase is still far from the WHO target of $\geq 90\%$. CDR of TB in Indonesia was reported at 64.5%. Of the 37 provinces in Indonesia, only two areas have achieved this target. Most of the regions have not reached, one of

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them is Central Java Province, which is reported to only have a CDR of 65.8% in 2019.

Semarang Regency is one of the areas in Central Java Province that has reported a decrease in case findings since the last two years. Health Office of Semarang Regency recorded the CNR in 2019 increased to 1,024 per 100,000 populations, but in 2020 this figure has decreased to 640 per 100,000 populations. The decrease in TB case finding is explained, one of which is caused by the low active TB case finding in the community.

The Ministry of Health of the Republic of Indonesia in the effort to control TB has initiated a strategy of finding suspected TB by passive intensive or active community-based (Indonesian Health Ministry, 2014). However, the implementation of active community-based case finding has not been implemented well in various parts of Indonesia. As explained by Wahyuni & Artanti., where a community-based surveillance system for finding suspected TB cases needs to be developed, considering that the low role of the community in active case finding will affect the low rate of TB case finding in the community. The existence of this community-based development aims to increase the role of the community in finding suspected TB cases in their environment (Wahyuni & Artanti, 2013).

Several significant efforts need to be made to achieve this target, including community empowerment to early detection and improving the quality of DOTS in all health facilities (Latifah et al., 2018; Rahayu et al., 2015). Community empowerment efforts are carried out to increase public awareness of TB disease, its prevention and treatment so that the community can be actively involved in case finding (Rita et al., 2019; Kartika, 2015). The involvement of the community and TB patients in TB control will be effective if implemented by building partnerships between the health sector and the community. It will ensure the public and patients have the same information about TB, raise awareness about TB, and have mutual responsibility for TB control (Reviono et al., 2013).

Research conducted by Aulia et al. (2020) in Makassar City, Indonesia, explained that the factor of low community participation in TB case finding is lack of knowledge about TB disease (Aulia et al., 2020). Research conducted in Semarang City, Indonesia, also explained that knowledge and skills about TB and TB control will increase the community participation (Umiasih, & Handayani, 2018). Low knowledge about TB is associated with high transmission and community delays in seeking TB treatment (Narasimhan, 2013). Therefore, health education is the key to community empowerment in increasing public knowledge and awareness of TB and partici-

pating in its prevention (Wahyuni & Artanti, 2013).

The IHE (Integrated Health Education) method is a health education method needed to maximize community empowerment activities to increase public awareness in TB case finding. The method in the form of health education through community counseling, was developed with training on how to detect TB early in the community through Training of Trainers (ToT). The training is provided by health experts, especially in TB disease directly to the community. Providing outreach to the community is a health promotion media that is expected to have an impact on increasing public knowledge and awareness of TB disease. Furthermore, by conducting training through the Training of Trainer (ToT) it will be able to form a skilled community in actively finding suspected cases of TB in the community. In contrast to the previous study by Bisallah et al. in 2018, which provided the provision of a health education intervention program regarding TB in HIV patients, it was effective in increasing their knowledge, attitudes, and behavior towards TB without any training to the patients (Bisallah et al., 2018).

One of the targets in community empowerment is the PKK (Family Empowerment and Welfare, in *Bahasa: Pemberdayaan dan Kesejahteraan Keluarga*) driving team in one area of Semarang Regency, namely, the Sumowono sub-district. Based on a preliminary study at the Sumowono Health Center, it was reported that TB case findings in 2020 were only 43 TB suspects found in 2020 and decreased from 2019 which was 97 TB suspects. Community involvement, especially in finding suspected TB cases, has not been carried out in Sumowono, which is a factor in the low TB case finding in the community. By empowering the PKK members through the IHE method, because one aspect of the PKK program is the health sector, it will be able to increase the knowledge of the PKK team and its role in the TB case finding program in the Sumowono area, Semarang Regency so that the TB case finding rate will be able to reach the target. Thus, this study aims to determine the effect and effectiveness of the Integrated Health Education (IHE) method on the knowledge and attitudes of PKK driving team about TB to increase TB case finding, especially in Sumowono District, Semarang Regency.

METHODS

This type of research was a quasi-experimental research design with a One Group Pre-test Post-test. The study was started from May to August and was conducted in Sumowono District. The population in this research was 25 women who were members of the PKK in the region. The sampling

technique used total sampling so that all PKK members became samples in this experiment. The criteria including being active members of the PKK and having agreed to participate in this research.

The Integrated Health Education (IHE) method was an intervention method provided to PKK members through counseling activities about TB disease, prevention and early detection of TB, and training to find cases in the community. The data collection process used a questionnaire as a pre-test and post-test instrument containing questions about knowledge and attitudes about TB disease, prevention, and early detection. Retrieval of data through a pre-posttest questionnaire aims to determine the description and influence of the IHE method to increase the knowledge and attitudes of PKK members in Sumowono about TB disease, prevention, and how to detect TB early. The media used during outreach and training uses videos, demo tools, and a pocketbook for TB early detection.

Data were analyzed using the data normality test to determine the distribution of data. The test results proved that the data were not normally distributed, so the Wilcoxon test analysis was carried out to assess the effect of the IHE method on the knowledge and attitudes of PKK members regarding TB disease and the N-Gain Score test to determine the effectiveness of the technique.

RESULTS AND DISCUSSION

Data from the pre-posttest results was tested by the data normality test to determine whether the data distribution was normal or not. The test results are presented in Table 1 below.

The data normality test results found that the pre-test p-value of each variable, both knowledge, and attitude, had a value of <0.001. Likewise, the post-test has a p-value of <0.001. So, this result can be concluded that the pre-post test data has an abnormal data distribution ($p < 0.05$). Therefore, further data analysis to determine the effect of IHE media on increasing the knowledge and attitudes of

PKK members about TB disease using the Wilcoxon test.

The analysis results in Table 2 report that the average value of knowledge before IHE intervention is 4.80 (SD: 0.41). After the intervention, IHE increased to 5.04 (SD: 0.35). This increase explains that the provision of intervention provides a change in the knowledges core to be higher. It is also evidenced by the results of the p-value at the knowledge level of 0.034. So it means that there is an effect of the provision of IHE method intervention on the level of knowledge of PKK members in the Sumowono sub-district about TB disease. A total of 7 PKK members experienced an increase in knowledge scores after being given counseling and training through the IHE method and 17 people did not experience an increase in knowledge or fixed knowledge scores.

An increase in the mean value also occurred in the attitudes of PKK members towards TB disease. The mean value of attitude before being given the IHE method was 5.40, and then after being given the IHE method, it was 5.76. The result of the p-value is 0.029 (< 0.05), which means that there is an effect of the IHE method intervention on the attitudes of PKK members about TB disease. The decrease in attitude scores after being given counseling about TB and its prevention as well as TB screening training through the IHE method was experienced by 2 PKK members as respondents in this study. However, 9 out of 25 people experienced an increase in their attitude towards TB after being given the IHE method.

To determine the effectiveness of the IHE method on the knowledge and attitudes of TB cadres about TB disease, the N-Gain Score test was performed. As seen in table 3, it is reported that the mean value of knowledge is 14%. In the category of effectiveness interpretation of N-Gain based on Hake (1999), if the mean value is <40%, it is categorized as an ineffective intervention. So, the IHE method was not effective in increasing the knowledge of PKK

Table 1. The results of the normality test of the pre-test and post-test data on the knowledge and attitudes of PKK members in the Sumowono sub-district about TB disease (n=25)

Variable	p-value
Knowledge	
Pre-test	<0.001
Post-test	<0.001
Attitudes	
Pre-test	<0.001
Post-test	<0.001

*p value > 0.05 = normally distributed data

Table 2. The effect of the IHE method intervention on the knowledge and attitudes of PKK members in Sumowono sub-district about TB (N=25)

Variable	Mean	SD	Median	Ranks (N=25)			p-value
				Negative	Positive	Ties	
Knowledge							
Pre-test	4.80	0.41	5.00				
Post-test	5.04	0.35	5.00	1	7	17	0.034
Attitudes							
Pre-test	5.40	0.65	5.00				
Post-test	5.76	0.52	6.00	2	9	14	0.029

*p-value<0.05 = significant

SD= standard deviation

members in the Sumowono sub-district about TB disease, prevention, treatment, and early detection methods in the community.

In contrast to the knowledge variable, the attitude variable presented in table 3 shows a mean value of 61.54%. This value is categorized as a moderately effective intervention (range: 56% - 75%). Therefore, the IHE method is an effective method to improve the attitudes of PKK members in the Sumowono sub-district towards TB disease, prevention, treatment, and early detection methods in the community.

At the level of knowledge, known that PKK members had good knowledge on the pre-test and improved better with the post-test increase in the knowledge level scores. Following the research objectives, namely, increasing public knowledge and understanding of information on TB disease. In line with research conducted in the City of Mataram in 2014, the provision of TB information and training to health cadres had a significant relationship with the role of health cadres in TB case detection (Sumartini, 2014). An individual will increase knowledge when he gets exposed to some information, increased understanding, and more information obtained and captured through sensing (Sandha & Sari, 2017).

In this intervention, increased knowledge of PKK members in Sumowono, Semarang Regency was obtained after counseling and training with the IHE method. The IHE method in education through health counseling and training as a medium for health promotion has been proven to affect public

knowledge in Sumowono. In line with Jatmiko's 2018 research conducted in the City of Surakarta, the varied lecture methods have increased general knowledge about TB disease. According to him, this method is easier to do and readily accepted by the community, especially with the involvement of experts in providing this education (Jatmiko, Romanda, & Hidayatullah, 2018).

The attitude variable also shows an increase due to the influence of the IHE method. The behavior of suspicious discovery by good cadres can be caused by knowledge, attitudes, training, motivation, and support from program managers. Exposure to information will affect the openness and knowledge of a person's thinking. If the information is considered good, then consciously or unconsciously, it will influence someone to behave and act. As per the report of Saraswati's research in Semarang City in 2014, a person exposed to information is 2.2 times at risk of doing good health practices (Saraswati, 2014). Likewise, with research by Raude et al. in Southeastern France in 2012, where participants who have good knowledge of disease prevention behaviors will have a better ability to take disease prevention measures (Raude et al., 2012). This result about health education was also proven in a study at Karanganyar Health Center by Ratnasari et al. Their study indicated that health education through the question and answer lecture method and guide books can improve TB disease prevention behavior (Ratnasari et al., 2015).

Health education is one of the keys and main elements in health promotion efforts. Health

Table 3. The effectiveness of the IHE method in increasing the knowledge and attitudes of PKK members in the Sumowono sub-district about TB disease (N=25)

Variable	N-Gain Score (%)		
	Mean	Max	Min
Knowledge	14.00	100	-100
Attitudes	61.54	100	-100

education aims to increase awareness, broaden horizons, acquire and improve skills, and shape attitudes in health for individuals and groups (Hahn & Truman, 2015). Research in Iran suggests that the provision of TB health education interventions should focus on the culture and beliefs of a society. This focus aims to make health education readily accepted by the community to maintain a positive attitude. In addition, the involvement of experts or competent people who have the same beliefs in conducting health education is considered more effective. This finding is interesting to review because it can consider health workers in carrying out health promotion programs (Mohammadi et al., 2014).

One of the cores of empowerment activities is creating an independent learning process to make changes continuously. Change through learning, training, and education is often slow, but the changes that occur are more stable and sustainable. Empowerment of the health sector concerns independence in organizing to tackle disease risk factors, especially TB (Sukei et al, 2017). It is also presented in the IHE method, where healthcadres, namely PKK members, are given training to screen and find TB cases in the community. Training is one form of the educational process through training learning objectives or academic targets to gain learning experiences that eventually lead to changes in their behavior (Handayani et al., 2017).

Empowerment of Family Welfare groups is part of community groups that can play a strategic role in health. With their potential, PKK members play a role as health cadres in TB prevention. However, prevention is better than cure. Health cadres are a form of community participation in primary health care developed through integrated service centers, are people who are selected and provided with health skills through the public health centers. (Ratnasari et al., 2019). The role of cadres as activists or managers of primary health efforts in the community will develop and run optimally if cadres have competent credibility, namely the ability or skills in the health sector according to the training that is being attended at the public health center. Besides that, it has safety credibility, which is the trust of the community. Credibility is essential so that cadres can develop their roles to manage a primary health effort. Satisfaction arises when a cadre feels that his credibility has increased with his activities as a cadre (Sumartini, 2014).

It is hoped that PKK members who are members of this intervention can regularly contribute as motivators and motivators for other mothers in the early detection and discovery of TB cases in the community and their families. Thus, it can have a significant impact on reducing TB cases

and deaths. The involvement of PKK members in the empowerment program is considered very appropriate, given the considerable potential.

CONCLUSION

There are differences in scores before and after being given counseling and training with the IHE method. It can be seen from the increase in the value of all aspects of the pre-post test, including elements of knowledge and attitudes about TB disease. It is necessary to evaluate each stage of the activity implementation to be conveyed to community leaders to improve early detection activities to increase TB cases. Community leaders as influential people need to be involved in health education and disease prevention in their environment. This research requires further research so that this intervention can be applied in society. The IHE method has proven to effectively improve community attitudes, especially PKK members, towards TB disease and its prevention, but not with the knowledge aspect. So, the development of this method is reasonable to do to be applied in the broader community and prevent other diseases in the community.

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