Korespondensi

“Short-term Effect of training in increasing midwives’ knowledge, attitudes, and practices related to HIV and AIDS prevention”

1. Submission Acknowledgement

Submission acknowledgement | BMS-TOAIDJ-2022-18

Inbox

The Open AIDS Journal **<admin@bentham.manuscriptpoint.com>** Oct 4, 2022, 9:32 AM

to me

Reference#: BMS-TOAIDJ-2022-18

Submission Title: Short-term Effect of training in increasing midwives' knowledge, attitudes, and practices related to HIV and AIDS prevention

Dear Dr. Zahroh Shaluhiyah,

Thank you for your submission to "The Open AIDS Journal". It will be sent to the Editor-in-Chief for his initial provisional approval. Once this is obtained it will be passed on to our Author Support Services department (BASS), for an initial assessment of the manuscript. BASS is a specialized department that helps authors and editors to make sure that the manuscript becomes ready for submission into the peer-review process. The manuscript is being processed on the clear understanding that it contains original work that has neither been published earlier nor has it been simultaneously been submitted for publications elsewhere. In case this is not so, then kindly let us know immediately.

Please note that Bentham Open uses **Cross Check's iThenticate** software to check for similarities between the submitted and already published material to minimize any chances of plagiarism.

Further, as per Bentham Open's Ethical Guidelines for Publication, all manuscripts are processed with the understanding that all authors and co-authors have reviewed and accordingly approved the manuscript before final submission to avoid any conflicts of interest later. Our ethical policies can be viewed on the Journal's website.

Articles which are well referenced (100 or more references) may have high chances of acceptance by referees and they are likely to attract a greater number of citations The recommended number of references as per norm (https://clarivate.com/essays/impact-factor/) for Review Articles is approximately 100 or more, for Research Articles 75 or more, for Mini Reviews 75 or more & for Letter Articles 50 or more.

In case of any doubt or conflict please contact us.

Your manuscript has been assigned to the following Editor/Manager to whom all correspondence may kindly be addressed:

Name: Michael Bukrinsky
Affiliation: The George Washington University, Department of Microbiology and Tropical Medic
Country: USA
Email: mbukrins@gwu.edu

Few tips to enhance the visibility & citations of your article:

- If you don't already have an ORCID ID please create one at https://orcid.org/register

- **Selection of Appropriate Keywords**: Please choose important and relevant keywords that researchers in your field could be searching for so that your paper can appear in many database searches. In biomedical fields, MeSH terms are a good 'common vocabulary' source to draw keywords from: see https://www.nlm.nih.gov/mesh/meshhome.html

- The names of the authors should be provided according to the previous citations (or as the authors would want them to be published) along with their institutional affiliations, current addresses, telephone, cell & fax numbers and the email address. Email address must be provided with an asterisk in front of the name of the principal author. The corresponding author(s) should be designated and their complete address, business telephone and fax numbers and e-mail address must be stated to receive correspondence and galley

proof. It is also suggested to regularly update your profile in SCOPUS and other databases.

- Authors should avoid the use of non-standard abbreviations and question marks in titles.

For articles submitted from non-English speaking countries, authors should have their articles carefully checked and the language corrected by a native English speaker. Alternatively, authors may want to avail Bentham's English language correction service. For a quote please contact Bentham editorial office. Please note that your article will not be processed till you have completed and returned the attached fee form by replying to this e-mail.

Looking forward to a successful collaboration in the publication of your article.

Sincerely,

Editorial Office
The Open AIDS Journal
Bentham Open
toaidj@benthamopen.net
https://www.benthamopen.com/TOAIDJ/home/

Bentham Open is constantly striving to improve its publication practices. If you are not satisfied with any procedure of the processing of your manuscript, then please let us know at the following email address with full details:

Note: For Assistance please contact: info@benthamopen.net

For complaints please contact: complaint@benthamopen.net

Please click below to Download Fee Form and Copyright Form.
TOAIDJ-copyright-letter (2).pdf | _copyright_form.pdf

To unsubscribe from MPS and stop receiving emails further. Please send an email

2. Submission Letter

Manuscript Initial Submission letter [BMS-TOAIDJ-2022-18]

Inbox

toaidj@benthamopen.net <admin@bentham.manuscriptpoint.com> Mon, Oct 17, 2022, 11:29 AM

to me

Reference#: BMS-TOAIDJ-2022-18
Submission Title: Short-term Effect of training in increasing midwives' knowledge, attitudes, and practices related to HIV and AIDS prevention

Dear Dr. Zahroh Shaluhiyah,

We are pleased to inform you that your article entitled, **"Short-term Effect of training in increasing midwives' knowledge, attitudes, and practices related to HIV and AIDS prevention"** has been initially approved by the Editorial Advisory Board of the journal **"The Open AIDS Journal".** to proceed further.

This is to inform you that currently your article is under editorial evaluation by Bentham Author Services Support (BASS) editors.

The Bentham Authors Services Support (BASS) editors consist of competent professionals who perform detailed, initial scrutiny of all submitted manuscripts. to assist authors in fine-tuning their manuscripts. This will help reduce the errors that may delay the review and publication process later. The core aim of the BASS editors is to ensure the complete, correct, and concise incorporation of all details needed at the initial stage, to ensure smooth and timely processing of the article to the peer-review stage.

Your article will be evaluated by the BASS editors for the following things:
* Language editing
* Figure quality checking/enhancement
* Reference duplication-checking/formatting
* Quality Control (Plagiarism/ Similarity Checking)
* Ethical protocols and overall text organization
* Citation of References / Figures / Tables etc.
* Selection of right category/nature of the article
* Funding details/acknowledgement etc.

Please note that on successful completion of this initial review, your article will then be subjected to a rigorous and neutral peer-review process, before an acceptance decision can be taken.

Thanks and Regards,

Editorial Office

To unsubscribe from MPS and stop receiving emails further. Please send an email to unsubscribe@bentham.manuscriptpoint.com.

Powered by Bentham Manuscript Processing System

3. Editor Revise

EDITOR REVISE

Reference#: BMS-TOAIDJ-2022-18

Submission Title: Short-term Effect of training in increasing midwives' knowledge, attitudes, and practices related to HIV and AIDS prevention

Dear Dr. Zahroh Shaluhiyah,

Thank you for submitting to "The Open AIDS Journal". Your manuscript has been reviewed, and it needs revision (comments given below/ attached). You may download the correct manuscript version by Clicking here . You are encouraged to carefully revise the manuscript, highlighting the exact changes made.

Our publication policy requires the return of your revised manuscript within **one week** from the date of receipt of this message.

When submitting a revised manuscript for further consideration, please ensure that all the suggested changes are incorporated in the manuscript. Also, highlight or mark up the changes made throughout the manuscript for ease of reference.

The final decision will be taken after the nature of your response letter and revision.

Authors from non-English speaking countries should ensure to have their articles corrected by a native English speaker for any grammatical, stylistic and typographical errors. You may want to avail the English language correction service at Bentham. If so, please write for a quote to the editorial office.

Authors who are native English speakers should ensure that their article has been carefully checked for language, grammar, and style (where appropriate). This is in your interest as it will substantially reduce the time taken for the publication of your article.

***References:** References should be provided exactly in the journals specific format.

Note: Please make sure to submit your revised manuscript through our Journal Management System https://bentham.manuscriptpoint.com/ otherwise it may face delays in processing.

Reviewer Comments:

Referee 1:

This is an interesting study of a brief training intervention program for midwives. The study aimed to improve their HIV-related knowledge, practices, and attitudes and HIV prevention practices. The design was a quasi-experimental pre-posttest, with a non-equivalent control group. The study is on an important topic, but there are a number of problems with the study that will each be briefly reviewed. 1. The Introduction is

somewhat redundant in some places (e.g., paragraph #4 should be integrated with the previous paragraphs and not repeat things already said). 2. The Riau study cited in the Introduction was not particularly applicable to this study, and it was unclear why it was described/cited. 3. One of the major problems with the study is there is not nearly enough description of the recruitment of the midwives. The authors simply state that 5 midwives were recruited randomly at each health center to participate. How many total were approached and how many refused? It seems like the refusal rate would be important to know here (for both intervention and control). Were the recruited midwives provided any compensation for participation in the study? If so, what was the incentive? 4. For the three main variables of interest (i.e., knowledge, attitudes, and practice), it would have been helpful if the authors had provided a couple of the questions from the assessment for each of these constructs. 5. The 3-day intervention is described. However, it isn't clear if the midwives in the intervention had to pass any completion criteria at the end of the intervention. 6. A second major limitation is that there was a baseline/pretest difference between the intervention and control group on attitudes, which is one of the key variables. (And of course one concern is since we know so little about recruitment, recruitment methods may be part of the reason for this difference.) The authors do not discuss this as a potential limitation anywhere in the paper. 7. On a more minor note, there are a number of grammatical errors throughout the paper that need to be addressed (e.g., changing of tenses, using phrases such as "get stigma," etc.), so the paper needs a thorough edit.

Referee 2:

General comments This paper describes an intervention in which 25 village midwives selected at random from 5 health centres having a high proportion of clients with prevalent HIV infection (5 midwives from each centre) were given a three-day training on HIV awareness and HIV support services available within antenatal care services. The midwives' knowledge, attitudes and practices were assessed by self-completed questionnaire before and one and three months after the training. The knowledge, attitudes and practices of 25 midwives selected from other health centres (5 per centre) who did not receive any training were also assessed. The two groups of midwives were of similar age and duration of employment (Table 1) and the authors claim had similar characteristics regarding experience with PLWHA, detection of HIV in pregnant women, adolescent pregnancy counselling, referring HIV patients to hospital (Table 2). A more in-depth review of Table 2 shows there are some important differences between the two groups, some but not all of which are consistent with the intervention group midwives working in a centre with high HIV prevalence. Table 3 shows there was an ~12% increase in knowledge score after 1 and 2 months, very little change in attitudes score, and ~6% and 20% increase in practices score after 1 and 2 months. Knowledge, attitudes and practices in the other midwives were only assessed once and were quite similar to those of the intervention midwives at baseline. Tables 4 and 5 present the results as absolute and percentage increases over baseline. Table 6 shows the results of fitting a logistic regression model to the practice score as a function of the knowledge and attitude scores. The fitted coefficients point to a 21-times higher practice score with an increase in knowledge. I have major problems with this article listed below: Design: The authors' description of the study as a "quasi-experimental pre-posttest non-equivalent control group design" is completely meaningless. It does not appear to me to

be experimental at all, not even seemingly experimental and I have no idea what a non-equivalent control group means. The authors only describe in plain language what they did. We need much more information on how the five health centres were selected for the intervention and how the five midwives were elected from all midwives in these centres. We do not even know how may midwives were available to be invited to participate in the training course. Unless there were exactly ten health centres it is inadequate to state that the other five health centres served as the control area when we read that the study instruments were tested in six other centres, suggesting there must be at least 16 health centres in the district. Results Table 2 p-values need to be checked – I checked a few and could not replicate any of the results. A quick look at the numbers in the table show there are some substantial differences between the two groups (e.g. Referring pregnant women at HIV risk to hospital) yet the authors have missed this entirely. Table 3 makes no sense. It appears from the design that there was no intervention in the control group so how can these people have pre and post test results? Table 4 does not appear consistent with the results in Table 3, e.g. the overall baseline mean knowledge score is reported as 19.253 while in Table 3 it is reported as 18.20. Similarly the Attitude and Practice scores are not consistent. Table 5 reports yet another mean baseline knowledge and practice scores. I could find nowhere a description of what factors were adjusted for in Table 5. Table 6 shows the results of a logistic regression model fitted to the practice score as a function of the knowledge and attitude scores. I cannot understand how a score in the range 0 to 15 can be fitted with a logistic regression model which normally applies only for binary (0 or 1) dependent variables. The authors interpretation “A midwife with sufficient/high knowledge will practice HIV/AIDS prevention twenty-one times more than those with low or insufficient knowledge” is meaningless and completely at odds with the modest increase in knowledge and practices reported in Table 3. In addition I could find nowhere a description of which of the three knowledge, attitudes and practices scores were used in the calculations. Additional comments The Abstract must contain sufficient information for the reader to understand what was done and key results. For example, instead writing that there was a ‘positive effect’ on knowledge the reader is more interested to know what the key results were, the magnitude and statistical significance of the effect. Acronyms need to be defined on first use. Examples include PMTCT, ANC, MCH, PLWH, IDU, … References to reports must include the full source so the reader could access if desired. The author names for institutional groups and reports (e.g. RI KK, Secretariat TA, E O-M) need to be spelt out; this might be a problem with the reference manager software used. Sample size. The formula as written is incomprehensible. It is necessary to define the size of the test and power (these seem to be two-sided 5% and 90% power judging from the Z values given and partially explained in the following paragraph), but there is no information what the numbers 7.9, 5.9, 70 and 63 come from nor what they represent. It is unclear why the authors chose 25 midwives per group when the sample size formula appears to result in 21 per group. Table 2 Education. Need to explain what is meant by D3, D4 and S2.

Sincerely,
Editorial Office, The Open AIDS Journal
Bentham Open

4. Rebuttal Letter

Rebuttal Letter

Michael I. Bukrinsky, MD, PhD

Editor-in-Chief,

The Open AID Journal

Dear Dr Bukrinsky,

Thank you for inviting us to submit a revised draft of our manuscript entitled **"Short-term Effect of training in increasing midwives' knowledge, attitudes, and practices related to HIV and AIDS prevention"** to The Open AIDS Journal. We also appreciate the time and effort you and each reviewers have dedicated to providing insightful feedback on ways to strengthen our paper. Thus, it is with great pleasure that we resubmit our article for further consideration. We have incorporated changes that reflect the detailed suggestions you have graciously provided. We also hope that our edits and the responses we provide below satisfactorily address all the issues and concerns you and the reviewers have noted.

To facilitate your review of our revisions, the following is a point-by-point response to the questions and comments in your letter dated November 21, 2022. We have the colour-coded revised manuscript as a yellow colour.

The reviewers' comments were constructive overall, and we are appreciated such constructive feedback on our original submission. After addressing the issues raised, the quality of the paper is much improved.

REVIEWER 1 COMMENTS:

Reviewer 1 General comment:

This is an interesting study of a brief training intervention program for midwives. The study aimed to improve their HIV-related knowledge, practices, and attitudes and HIV prevention practices. The design was a quasi-experimental pre-posttest, with a non-equivalent control group. The study is on an important topic, but there are a number of problems with the study that will each be briefly reviewed

Authors' response:

We thank you for your great comments on this manuscript, and we very much appreciate your time and dedication to providing insightful feedback to improve this manuscript. We have edited the manuscript to address your concerns.

Reviewer's comment No. 1:

The Introduction is somewhat redundant in some places (e.g., paragraph #4 should be integrated with the previous paragraphs and not repeat things already said).

Authors' response:

Thank you for your correction. This paragraph has already been revised, and paragraph 4 has been incorporated into paragraph 3.

Reviewer's comment No. 2:

The Riau study cited in the Introduction was not particularly applicable to this study, and it was unclear why it was described/cited.

Authors' response:

This sentence has been deleted and changed to a more relevant sentence. It was cited from reference no 16 (thank you for your correction)

Reviewer's comment No. 3:

One of the major problems with the study is there is not nearly enough description of the recruitment of the midwives. The authors simply state that 5 midwives were recruited randomly at each health center to participate. How many total were approached and how many refused? It seems like the refusal rate would be important to know here (for both intervention and control). Were the recruited midwives provided any compensation for participation in the study? If so, what was the incentive?

Authors' response:

The recruitment of the midwives has been described in detail including how the participants were recruited at figure 1. Revision included in material and method section for participant recruitment.

The compensation and incentive for midwives have also been elaborated on in more detail. Revision is also included in the intervention procedures section.

Reviewer's comment No. 4:

For the three main variables of interest (i.e., knowledge, attitudes, and practice), it would have been helpful if the authors had provided a couple of the questions from the assessment for each of these constructs.

Authors' response:

An example questions from the assessment of 3 main variables have been provided in the text, including the score of each variable.

Reviewer's comment No. 5:

The 3-day intervention is described. However, it isn't clear if the midwives in the intervention had to pass any completion criteria at the end of the intervention.

Authors' response:

Reviewer's comment No. 6:

A second major limitation is that there was a baseline/pretest difference between the intervention and control groups on attitudes, which is one of the key variables. (And of course one concern is since we know so little about recruitment, recruitment methods may be part of the reason for this difference.) The authors do not discuss this as a potential limitation anywhere in the paper

Authors' response:

The limitation of this study has been mentioned at the end of the discussion section. Such as the limitation of small sample size, the short-term training, which is an only 3-day training, and the lack of a control group which have not been provided intervention that is not related to HIV prevention and perhaps the differences in attitudes variable between control and experimental groups. (Thank you so much for the suggestion)

Reviewer's comment No. 7:

On a more minor note, there are a number of grammatical errors throughout the paper that need to be addressed (e.g., changing of tenses, using phrases such as "get stigma," etc.), so the paper needs a thorough edit.

Authors' response:

This sentence has been edited and changed the phrase has.

REVIEWER 2 COMMENTS:

Reviewer 2 general comment:

I have major problems with this article listed below: Design: The authors' description of the study as a "quasi-experimental pre-post-test non-equivalent control group design" is completely meaningless. It does not appear to me to be experimental at all, not even seemingly experimental and I have no idea what a non-equivalent control group means.

Authors' response:

Thank you for your comments, we are appreciated your time and effort in providing very valuable feedback on this manuscript. In my opinion, this study was quasi-experimental pre-pos-test control group design because of the respondent without randomly selected from the beginning of the study. We have deleted the word "non-equivalent".

Reviewer 2 comment:

We need much more information on how the five health centres were selected for the intervention and how the five midwives were elected from all midwives in these centres. We do not even know how may midwives were available to be invited to participate in the training course. Unless there were exactly ten health centres it is inadequate to state that the other five health centres served as the control area when we read that the study instruments were tested in six other centres, suggesting there must be at least 16 health centres in the district.

Authors' response:

We sincerely appreciate your comments and suggestions. There are 27 health centres in this district. The study instrument was conducted in six health centres and ten selected HCs for control and experimental groups. for detail description, the midwife's recruitment has been described at figure 1. Revision included in material and method section for participant recruitment.

Reviewer 2 comment:

Results Table 2 p-values need to be checked – I checked a few and could not replicate any of the results. A quick look at the numbers in the table show there are some substantial differences between the two groups (e.g. Referring pregnant women at HIV risk to hospital) yet the authors have missed this entirely.

Authors' response

Thank you for noting this. We are very sorry for this misplaced data. We have corrected it.

Reviewer 2 comment:

Table 3 makes no sense. It appears from the design that there was no intervention in the control group so how can these people have pre and post test results? Table 4 does not appear consistent with the results in Table 3, e.g. the overall baseline mean knowledge score is reported as 19.253 while in Table 3 it is reported as 18.20. Similarly the Attitude and Practice scores are not consistent.

Authors' response:

Thank you for noting this. Although the control group did not receive the HIV training intervention along with the intervention group, but after completion of the study, the training was provided to the control group with a similar quantity and quality, including the same compensation. Mean in table 3 was group mean (18.20 for intervention and 18.56 for control groups), while in table 4 and 5 were the overall mean or grand mean (19.253). Thank you for the correction of the grand mean in table 5. We are sorry for this mistake. Now we have revised the data in table 5.

Reviewer 2 comment:

I could find nowhere a description of what factors were adjusted for in Table 5.

Authors' response

In table 5, we did not involve the attitudes variable (because of covariate) in the adjustment model.

Reviewer 2 comment:

Table 6 shows the results of a logistic regression model fitted to the practice score as a function of the knowledge and attitude scores. I cannot understand how a score in the range 0 to 15 can be fitted with a logistic regression model, which normally applies only to binary (0 or 1) dependent variables. The authors interpretation "A midwife with sufficient/high knowledge will practice HIV/AIDS prevention twenty-one times more than those with low or insufficient knowledge" is meaningless and completely at odds with the modest increase in knowledge and practices reported in Table 3

Authors' response

Thank you for the detail comments. Each variable scale was changed into a categorical scale to examine this association. The knowledge variable was categorized into low knowledge (score<mean) or sufficient knowledge (≥ mean), and likewise, the attitudes (positive or negative attitudes) and practices (yes or no) scales. Then, each category was applied in binary (0 or 1).

The description has been added in the statistical analysis section.

Reviewer 2 comment:

Additional comments The Abstract must contain sufficient information for the reader to understand what was done and key results. For example, instead writing that there was a 'positive effect' on knowledge the reader is more interested to know what the key results were, the magnitude and statistical significance of the effect.

Authors' response

It has been added in the abstract (results paragraph) and in the conclusion section

Reviewer 2 comment:

Acronyms need to be defined on first use. Examples include PMTCT, ANC, MCH, PLWH, IDU, … References to reports must include the full source so the reader could access if desired. The author names for institutional groups and reports (e.g. RI KK, Secretariat TA, E O-M) need to be spelt out; this might be a problem with the reference manager software used.

Authors' response

It has been defined for each acronym. The author's name in the reference has been revised according to the Journal's rule.

Reviewer 2 comment:

. It is necessary to define the size of the test and power (these seem to be two-sided 5% and 90% power judging from the Z values given and partially explained in the following paragraph. It is unclear why the authors chose 25 midwives per group when the sample size formula appears to result in 21 per group.

Authors' response

Considering the possibility of dropping out during intervention, the researchers selected to invite a total of 50 midwives who met the inclusion criteria to participate in this study. Therefore, the intervention and control groups consisted of 25 each.

Reviewer 2 comment:

Table 2 Education. Need to explain what is meant by D3, D4 and S2.

Authors' response

Table 2 Education has been edited and explained.

Again, thank you very much for giving us the opportunity to strengthen our manuscript with your valuable comments and queries. We have worked hard to incorporate your feedback and hope these revisions persuade you to accept our submission.

Sincerely,

Zahroh Shaluhiyah

Corresponding Author

Faculty of Public Health, Diponegoro University, Semarang, Indonesia

Jl Prof Dr Soedharto SH Tembalang, Semarang, Central Java, Indonesia

E-mail address: Shaluhiyah.zahroh@gmail.com

5. First Revise

Short-term Effect of training in increasing midwives' knowledge, attitudes, and practices related to HIV and AIDS prevention

Zahroh Shaluhiyah[1*], Antono Suryoputro[2], Delita Septialti[3]
[1] Department of Health Promotion and Behavioural Sciences, Faculty of Public Health, Diponegoro University
[2] Department of Health Administration and Policy, Faculty of Public, Health Diponegoro University
[3]Master's of Health Promotion, Faculty of Public Health, Diponegoro University

Email: shaluhiyah.zahroh @gmail.com

ABSTRACT

Introduction: The study aims to analyse the effect of the training intervention program on midwives' HIV-related knowledge, attitudes, and practices in Central Java. The training focused on HIV epidemiology, transmissions, co-infections, PITC, risk contacts, and prevention of mother-to-child transmission (PMTCT). It was designed to improve midwives' knowledge, positive attitudes, and HIV/AIDS prevention practices, including reducing fear and stigma concerning people living with HIV/AIDS (PLWHA).

Material and methods: This study employed a Quasi-experimental pre-post-test design. The respondents are 50 village midwives equally divided into experimental and control groups. Data were collected using a questionnaire adapted from WHO, and it included questions about participant demographic characteristics, knowledge, attitudes, and practices on HIV and AIDS prevention programs. Furthermore, training consists of lecturing, group discussion, simulation, conversation with PLWHA, and watching a film about HIV including practicum.

Results: There was a positive effect on midwife knowledge, attitudes, and practices in the early detection of HIV cases for pregnant women and reproductive age groups and HIV/AIDS prevention programs. The improvement in knowledge, attitudes, and practices occurred significantly in the intervention compared to the control. The adjustment intervention effects were beneficial and statistically significant (p-value <0.05), particularly the magnitude of the treatment effect for the knowledge score, increased of 7.73% of the baseline mean knowledge. There was a significant association between knowledge and practices with a p-value of 0.019 and OR 21.20.

Conclusion: Training midwives in HIV prevention was a beneficial program and positively impacted knowledge, attitudes, and practices. This study recommended the need for comprehensive training for village midwives, especially those related to their tasks in HIV prevention.

Keywords: HIV training, midwives, knowledge, attitudes, practices

Commented [ZS1]: Referee 2 comment: the magnitude of the treatment has been added in the abstract

1. INTRODUCTION

The Human Immunodeficiency Virus (HIV) epidemic in Indonesia has been increasing three times higher compared with many other South East Asian countries. Recent data showed that the prevalence increases in housewives and children more than in critical populations. The higher incidence rate among mothers/housewives is because most husbands are more likely to have sexual relations with commercial sex workers. Most mothers conducted HIV tests when their husbands died, and their children have been getting chronic diseases such as diarrhoea, upper respiratory tract infection, and pneumonia [1, 2]

Commented [ZS2]: Referee 2 comment: The acronym of HIV, PMTCT, PITC, VCT have been defined.

Based on WHO recommendations, in the absence of participation in mother-to-child transmission prevention programs (PMTCT), the percentage risk of HIV mothers transmitting the virus to their babies is around 15% to 45%.

Therefore, early detection during pregnancy provides a gateway to preventing children from acquiring HIV from their mothers. HIV test is crucial for encouraging the mother to participate in the PMTCT program. However, voluntary counselling and tests (VCT) in many health services, as one of the efforts to encourage people, including mothers, to be aware of their status voluntarily, has not been utilized optimally. Even though the number of identified high-risk people has increased, fewer have participated in counselling and test. Provider-Initiated HIV (PITC) testing and counselling for pregnant mothers have been introduced and should be provided by health workers, including midwives, as a part of antenatal care (ANC) services. Therefore, midwives had to be educated in HIV prevention, reducing stigma and discrimination, including fear of spreading the disease[3, 4].

The Government of Indonesia launched a village midwife program in 1989 to place a skilled birth attendant in every village to respond to the high rate of maternal mortality.[5] Midwives are the primary sources of reliable health information and role models for potential and pregnant mothers since they provide many maternal and child health services, particularly for the villagers. Midwives have high-intensity interaction with mothers in the MCH clinic and at home compared to other health professions. Instead of providing services, the key role of midwives also includes health promotion related to sexual and reproductive health and HIV/AIDS. Therefore, midwives would play an important role as health educators and promotors to encourage the mother to do HIV tests. However, many midwives lack knowledge and attitudes toward sexuality and HIV/AIDS [6].

Commented [ZS3]: Referee 1 comment no 1 : This paragraph already been revised and paragraph 4 has been incorporated into paragraph 3

Demak Regency reported that the 2021 cumulative number of people HIV infected is about 638 or 0.03% of the total population, including pregnant mothers. In 2014, the data identified only 2 cases, increasing significantly from 2015 until now. Since Regency Health Office recommended that village midwives conduct the PITC approach as routine care of pregnant women in the ANC clinic, they should be educated and trained about HIV/AIDS, primarily PMTCT and PITC. There are 269 village midwives in Demak, and less than 20% have been informed about HIV/AIDS and PMTCT. Stigma and discrimination, including fear of contagion disease, are still high among midwives.[7, 8]

Health providers, including midwives, need information about HIV/AIDS because they lack knowledge about transmission and prevention. One study reported that nearly half, or 42.4%, of health providers, discriminate against patients living with HIV/AIDS (PLWH) in their services, such as doing PLWH isolation and using personal protection equipment when providing services to PLWH. The negative attitudes of health providers include judgments about the moral worth of PLWH [9, 10] and rejection of providing a service because of fear of contagion[11].

A factor that causes the failure of HIV prevention efforts is the high stigma and discrimination against people living with HIV. Stigma makes people with HIV, and their families feel afraid and embarrassed to seek help related to the disease, even refusing to take precautions. Stigma occurs in society and health care [12] , and some health workers prefer to be distant and not offer health care to HIV people. This includes Female Sex Workers, IDUs, and males who have sex with a man. Stigma by health workers occurs because of the anxiety of contracting HIV while treating patients. Based on research conducted in Iran, around 45% and 53% of health workers have poor and moderate attitudes toward people living with HIV. They fear being infected when caring for PLWH patients, making health workers inform their colleagues in writing. This information is conveyed to correctly use universal precautions in treating the patient [13, 14]. The results also show that health workers who treat HIV patients will be shunned by their socio-environment, including family, and colleagues [14]. A study in Indonesia also found that health workers were shunned by colleagues, family, and friends in the neighborhood for working with HIV patients. Another study found that health workers still fear HIV, thus, they avoid caring for the patients [10, 15]. In recent years, though there have been efforts to prevent HIV transmission from mother to child in Central Java Province, which is integrated into antenatal care services, HIV cases among pregnant mothers remain increasing. The previous study shows that midwives tend to refuse to serve pregnant mothers who was suspected as being infected by HIV [16].

They would instantly refer the suspected mother to hospital due to fear of contracting the disease. Lack of Knowledge and misinformation on HIV causes including negative attitude towards people living with HIV among midwives remain high [17].This study was conducted to improve ANC services related to HIV and AIDS prevention including reducing stigma at the village level by enhancing village midwives' knowledge, attitudes, and practices. Furthermore, it examines the short-term training effect of midwives' knowledge, attitudes, and HIV and AIDS prevention procedures.

Commented [ZS4]: Referee 1 comment no 2, statement of Riau study has been deleted and revised, cited from reference no 16

2. MATERIAL AND METHODS

The study employed a quasi-experimental design with a comparison group baseline and end-line measurements using non-random assigned intervention and control groups at Demak regency. There are 27 health centres throughout Demak regency, with total number of village midwives were 269 persons [7].On average, there are 10 village midwives for each health centres. Ten health centres were selected purposively with inclusion criteria: the highest incidence of HIV cases at pregnant mothers and children, and the highest number of high-risk men. The village midwives at selected health centres who never attended HIV training and willing to participate were involved in this study. The participants recruitment shows as follows:

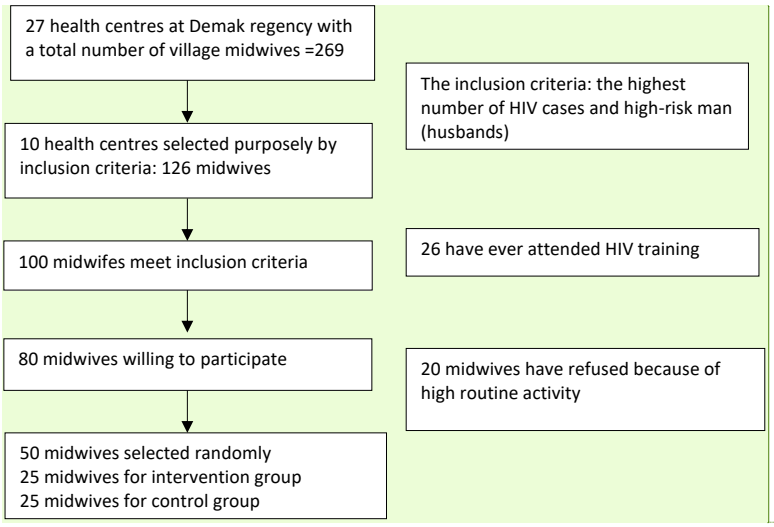

Figure 1. Participant Recruitment

Commented [ZS5]: Referee 1 comment no.3 the description of the recruitment of the midwives has been described in detail including how the participants recruited at figure 1

The sample size was calculated using the Lemeshow formula by assuming of confidence interval of 95% and a power of 80%; [18-20] in addition to minimum difference of two KAP before and after intervention, resulting in a minimum sample was 22 each. Considering the possibility of drop out during intervention, the researchers selected to invite of a total 50 midwives who met the inclusion criteria to participate in this study. The experimental and control groups were carefully selected to avoid the possibility of contact across the group and to prevent risk of contamination. Then, five midwives were recruited randomly at each health centre to participate in this study. Therefore, the intervention and control groups consisted of 25 midwives, respectively.

Commented [ZS6]: Referee 2 comment in the sample size has been corrected and described in more detail

The study was conducted from July 2019 until September 2019, and the participants signed an informed consent form before observation. The Ethical Review Board of the Faculty of Public Health at Diponegoro University, Semarang, Indonesia approved the study protocol with No. 195/EC/FKM/2019.

2. 1. Intervention Procedures

Training intervention for midwives consisted of three days with ten sessions focused on basic information, including the HIV epidemic. Day first consists of lecturing and discussing HIV/AIDS awareness and attitudes, transmission and infection control, navigating the stigma, discrimination, psycho-social impact of HIV/AIDS, the roles of midwives and practices with mothers, addressing trauma, and social support issues related to ANC HIV testing. The following day is simulation and role-playing, including a discussion of cases and testimony from people living with HIV/AIDS, and day third is a practicum, fieldwork, and case analysis. During training all participants were provided snacks and lunch. At the end of the 3-day training, they were provided the compensation of 3 days transportation and incentive fees including educational materials. Classes were held in District Health Office. Although the control group did not receive the HIV training intervention along with the intervention group, but after completion of the study, the training was provided to the control group with a similar quantity and quality, including the same compensation.

A five-person team collected data, including health personnel and research. The instrument was a standardized, interviewed-administered questionnaire adapted from WHO. It consists of (1) Sociodemographic characteristics such as sex, age, duration of being a midwife, and experience in handling HIV/AIDS patients. (2) Knowledge regarding HIV/AIDS as assessed by 25 close-ended questions. The question is such as " PITC refers to HIV testing and counselling which is recommended by health providers to persons who has HIV risk behaviour ", answer: yes (1) or no (0), (3) attitudes towards HIV/AIDS prevention including universal precautions used and stigma by 10 questions. For example **"**During ANC services, a midwife has to ask the pregnant mother to do HIV testing" answer: strongly agree (2), agree (1) and neutral (0), disagree (0). (4) midwives' practices to prevent HIV/AIDS are assessed by 15 questions**.** The question example is: "I always do HIV counselling for pregnant women during ANC services"**.** For each knowledge question, the score is one point for the correct answer and zero for the incorrect one, and the possible score ranges from 0-25. Each attitude statement was scored from 2 for the most positive attitude to zero for the most negative and the possible score range 0-20. Respondents selected one choice ranging from strongly agree and disagree. For practice questions, one point is awarded for the practice and none for the not practice and the possible score ranges 0-15.

The questionnaire was validated with pilot testing to check the validity and reliability of 30 midwives in six other health centres in the Demak district. The pilot testing result was good reliability with a Cronbach alpha of more than 0.82. Furthermore, sociodemographic characteristics variables of both groups were administered before intervention and compared between the two groups to identify confounding variables. Variables of knowledge, attitudes, and practices related to HIV/AIDS prevention were administered baseline and after the intervention.

2. 2. Statistical Analysis

Univariate analysis was employed to describe means, median, frequencies, percentages, and standard deviations for sociodemographic data, knowledge regarding HIV/AIDS, attitudes, and practices related to HIV prevention, including universal precautions. The difference scores in baseline data between the independent variables of the intervention and control group were tested by Chi-squares for dichotomous and independent t-tests for continuous variables. At each follow-up/end-line time, the magnitude of the intervention effect is counted through the difference between the intervention and control groups in the mean score change. This is shown in the formula below:

Commented [ZS7]: Referee 1 comment no 3 about the compensation and incentive has been elaborated

Referee 2 comment on the intervention for control group has been described.

Commented [ZS8]: Referee 1 comment no.4 the questions from assessment of 3 main variables have been provided in the text, including the score of each variable

The intervention effect = (Post-test–Pre-test) intervention – (Post-test–Pre-test) control groups

Linear mixed models were employed to quantify and test the statistical significance of intervention effects on knowledge and attitude scores at post-test and follow-up time. Unadjusted and adjusted fixed effects models in follow-up and intervention times were tested. Each model included the repeated measure, the respondent as an individual subject, with an unstructured covariance type. The variables' characteristics, including experience in caring for PLWHA, counselling, referring to hospital, home visits, and educating HIV pregnant women show homogenous between intervention and control groups before intervention. Therefore, no covariate variable should be adjusted to a fixed effects model. In addition, the association between practice scores as a dependent variable, and knowledge, and attitudes as independent variables was also tested by logistic regression. For examining this association, each variable scale was changed into a categorical scale. The knowledge variable categorized into low knowledge (score<mean) or sufficient knowledge (≥ mean), and likewise, the attitudes (positive or negative attitudes) and practices (yes or no) scales. Then, each category was applied in binary (0 or 1). SPSS v21 was employed for running statistical analyses.

Commented [ZS9]: Referee 2 comments on logistic regression process. It also has been described

3. RESULTS

In the intervention and control groups, the independent variables' knowledge, attitudes, and practices related to HIV/AIDS prevention were measured before, one month after, and two months after. Categorical and Continuous independent variables are summarized and compared between the intervention and control groups before intervention (table 1 and 2, respectively).

Table 1. Baseline Characteristics compared between the intervention and control group for age and length of working (continuous independent variables)

Characteristics	Intervention Group (n = 25),		Control Group (n = 25),		p-value
	Mean	SD	Mean	SD	
Age (Y)	35.6	5.976	35.20	5.259	0.501
Length of working (Y)	13.56	6.427	13.12	6.294	0.73

Note: By independent t-test

The statistical result using the independent T-Test showed that the prevalence of variable age of respondents and length of work between the intervention and control group have no differences. The average age of midwives is around 35 years old, and the length of employment is 13 years, meaning most respondents have worked relatively for a long time.

Table 2. Characteristic differences in intervention and control groups before intervention

Characteristics	Intervention Group (n = 25),n (%)	Control Group (n = 25), n (%)	p-value
Education			
3-years Diploma	14 (56)	17 (68)	
4-years Diploma	9 (36)	8 (32)	0.299
Master graduates	2 (8)	0 (0)	
Experience in PLWHA care			
Have experience	12 (48)	17 (68)	0.319
Have no experience yet	13 (52)	8 (32)	
HIV Early detection of pregnant women			
Have experience	12 (48)	19 (76)	0.411
Have no experience yet	13 (52)	6 (24)	

Commented [ZS10]: Referee 2, table of education has been explained

Counselling for unwanted pregnancy to adolescents			
Have experience	22 (88)	15 (60)	1.000
Have no experience yet	3 (12)	10 (40)	
Referring pregnant women at HIV risk to hospital			
Have experience	5 (20)	6 (24)	1.000
Have no experience yet	20 (80)	19 (76)	
Home visit to HIV patient			
Have experience	5 (20)	6 (24)	1.000
Have no experience yet	20 (80)	19 (76)	
Mentoring HIV patients as case managers			
Have experience	1 (4)	6 (24)	1.000
Have no experience yet	24 (96)	19 (76)	
HIV education for pregnant women			
Have experience	22 (88)	18 (72)	1.000
Have no experience yet	3 (12)	7 (28)	

Commented [ZS11]: Referee 2 comment: the data has been misplaced, and now has been corrected

The Chi-Square Test showed that the education of respondents and the prevalence of variables related to experience with HIV care, early detection, counselling, referring HIV patient, home visit, and education were homogenous between the two groups. Therefore, both groups have similar characteristics before the intervention. Questions related to knowledge, attitude, and practices were measured before, one month after (follow-up 1), and 2 months after the intervention (follow-up 2).

3. 1. Differences between intervention and control groups related to Knowledge, Attitudes, and Practices of PITC before the intervention

Table 3. Differences between intervention and control groups in terms of knowledge, attitudes, and practices before intervention

Variables	Intervention Group (n = 25), Mean (SD)	Control Group (n = 25), Mean (SD)	p-value
Pre-test			
Knowledge	18.20 (2.141)	18.56 (1.356)	0.256
Attitudes	9.88 (0.332)	9.48 (0.714)	0.020
practices	7.56 (2.599)	7.96 (4.363)	0.605

Commented [ZS12]: Referee 2 comment on table 3 has been revised

The intervention program was conducted within three days using a classroom setting. Based on the theory of Social Cognitive, the knowledge and attitudes of respondents who receive training will improve by 50% [21]. Descriptive statistics describe the mean, frequency, percentage, and standard deviation for sociodemographic characteristics of respondents, knowledge, attitudes, and practices related to HIV/AIDS prevention.

There is no difference between knowledge and practice scores in the prevention for the control and intervention groups. The respondents have not received HIV/AIDS prevention training for both groups. However, the attitudes mean score was significantly different between the two groups, with a p-value of 0.020. The majority of respondents have a positive attitude toward HIV prevention. For knowledge, the average score of the intervention and control groups is 18.20 and 18.50, with a P-value of 0.256. The practice mean score for the control and intervention groups is slightly higher at 7.96 and 7.56.

Post-test 1 measurement was given shortly after one month of the intervention, and the respondents' knowledge had increased from 18.20 to 20.44. There was a significantly increased knowledge of the intervention group by 2.24 points. Meanwhile, the practice variable in the intervention group increased significantly from 7.56 to 8.04, and the p-value was 0.035. In attitude variables, there is no difference between the intervention and the control groups because the attitude change needs to take longer than the knowledge. The attitudes score slightly increase from pre-test to post-test 1 and post-test 2 with the mean scores were 9.88, 9.89, and 9.95 respectively.

The measurement results of 2 months after the intervention showed increased respondents' knowledge, especially related to counselling communications to HIV patients. The intervention group's knowledge, attitude, and practice variables also increase. In the second post-test, there is a difference between the knowledge and attitude of the intervention and control groups. However, the practice between the control and intervention groups has shown a significant difference. Even though the groups had statistically different practice scores, the increase was lesser than the knowledge score. After two months of intervention, some practices can be accomplished while on the field.

3. 2. Effect of treatment on knowledge and attitudes toward HIV on village midwives in Demak district

Table 4. Absolute magnitudes of unadjusted intervention effects on knowledge, attitude, and practice scores, and intervention effects as percentages of baseline mean scores at follow-up I and II

Score	Overall mean at baseline (Grand mean)	Intervention effects (unadjusted), Follow-up I			Intervention effects (unadjusted), Follow-up II		
		Absolute magnitude (95% CI)	p-value	As % of baseline mean	Absolute magnitude (95% CI)	p-value	As % of baseline mean
Knowledge	19,253	1.500 (0.801-2.199)	0.001	7.79	1.120 (0.421-1.819)	0,002	5.91
Attitude	9,673	0.100 (0,096-2.296)	0.865	2.06	0.040 (-0.273-0.193)	0.734	4.13
Practice	8.080	0.720 (-0.684-2.124)	0.313	8.91	0.240 (-1.164-1.164)	0.736	2.97

Unadjusted intervention effects at post-tests 1 and 2 are shown in Table 4. The intervention was associated with a statistically significant increase in knowledge score with a p-value < 0.05 for both follow-up times. From the baseline to post-test 1, knowledge scores increased by 1.5 points more in the intervention group than in the control group. It represented an intervention-related increase of 7.79 % of the baseline mean knowledge score. The absolute intervention effect on the attitude score was smaller than the knowledge score, although the improvement was very small and statistically insignificant. Since the training is only three days, it needs more time to boost motivation to change the midwife's attitudes toward preventing HIV/AIDS. For the practice score, the absolute intervention effects were larger than the attitude scores, but the proportional increase in the former was smaller. The intervention-related benefit for all dependent variable scores was similar at both follow-up times.

Table 5. Absolute magnitudes of adjusted intervention effects on knowledge score and attitudes' score, and intervention effects as percentages of baseline mean scores at follow-up I and follow-up II

		Intervention effects (adjusted),	Intervention effects (adjusted),

Grand mean Score	Overall mean at baseline (Grand mean)	Follow-up I			Follow-up II		
		Absolute magnitude (95% CI)	p-value	As % of baseline mean	Absolute magnitude (95% CI)	p-value	As % of baseline mean
Knowledge	19.253	1.142 (0,310-1,975)	0.003	5.931	1.489 (0,656-2,321)	0.000	7.733
Practice	8.080	0.240 (-1,481-1,961)	1,000	2,970	0.720(-1,001-1,441)	0,938	8.910

Commented [ZS13]: Referee 2 comment, on table 5 the overall mean (grand mean) has been revised

The absence of differing characteristics between the groups did not adjust for all independent variables. Only the attitudes score as one of the dependent variables was a significant difference between the groups at baseline. Therefore, an adjustment model was made without involving the attitude variable to show the magnitude of the treatment effect. Adjustment means knowledge and practice scores at three measurements shown in Table 5. The adjustment intervention effects were beneficial and statistically significant (p-value <0.05) only for the knowledge score increase of 7.73 % of the baseline mean knowledge. It is probably the effect of intervention needs more time to modify attitudes and practices.

Commented [ZS14]: Referee 2, because of attitudes variable is as covariate, so adjustment model made without attitudes

Improved practice scores between intervention and control groups can be seen in the following graph:

Figure 2. The intervention and control groups were unadjusted mean practice scores at baseline, post-test 1, and post-test 2.

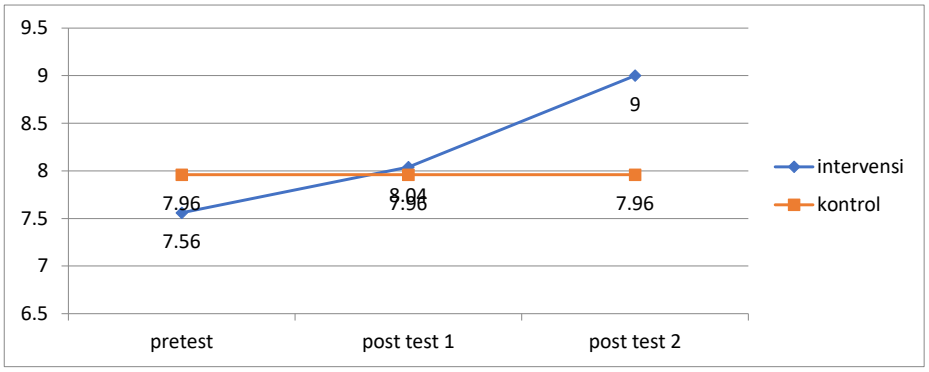

Table 6. Association between knowledge and attitudes as independent variables and practices as a dependent variable by logistic regression after one month of intervention

Variable	B	Wald	Odd Ratio	sig	CI (lower-upper)
Knowledge	3.054	5.510	21.209	0.019	1.655-271.713
Attitudes	-1.811	1.692	0.163	0.193	0.011-2.505
constant	-1.280	0.879	0.278	0.349	

The overall association between knowledge and attitudes, and practices are shown in Table 6. Logistic regression results show a strong and significant positive association between knowledge and practices, but not for attitudes. A midwife with sufficient/high knowledge will practice HIV/AIDS prevention twenty-one times more than those with low or insufficient knowledge.

4. DISCUSSION

This quasi-experimental study was undertaken to measure and assess the effects of training to improve village midwives' knowledge, attitudes, and practices in HIV/AIDS prevention activities in Demak District, Central Java, Indonesia. The treatments were substantially and significantly related to increasing midwives' knowledge, attitudes, and practices. Based on the results, the expected intervention target is to reduce the incidence of HIV transmission in infants infected through their mothers during pregnancy and delivery in the Demak District. This study is expected to reduce stigma among HIV-AIDS patients and increase village midwives' knowledge, attitudes, and practices in HIV prevention.

The intervention combines several components, including training conducted during the three days that include integration practices ANC-PMTCT, demonstration as a way of counselling, and effective communication for pregnant women to examine and prevent HIV. The intervention is targeted to reduce the incidence of HIV in infants whose mothers infect during pregnancy and childbirth. An unsupported understanding of pregnant women with the ability of the village midwife to be the primary helper in counselling and testing can lead to a higher HIV incidence in the infant age group. The midwife's strategic position in carrying out this integration is considered a good foundation and prefix. Early detection of HIV can be unforgettable when midwives perform health checks on pregnant women. The risk of midwives contracting HIV during childbirth is also high [22]. Therefore, training to improve the understanding, awareness, and positive attitudes toward early detection is beneficial. Recognizing the risk of childbearing-age and pregnant women infected with HIV is also needed. A study mentions that intervention in the form of standardized knowledge sharing and contact with people living with HIV for 50 minutes with health workers in Hong Kong can reduce the stigma among health workers [23]. The provision of HIV education, testing, and messages such as brochures, bulletins, and testimony can reduce stigma [6, 24, 25].

The midwives are recognized as responsible and accountable professionals working in partnership with women to provide the necessary support, care, and advice during pregnancy, childbirth, and the postpartum period. The mother-to-child HIV early detection factors are a pregnant mother's readiness for HIV testing, husband support, information access, and support from midwives or other health workers [26]. In this regard, health personnel needs support in the form of early HIV detection, PMTCT services, and stigma reduction in PLWHA[27]. For midwives to provide good services to PLWHA, they are required to have complete knowledge. Following the needs of pregnant women regarding HIV / AIDS, knowledge and attitude interventions should be provided to implement knowledge and attitudes in their PMTCT activities [27, 28].

It should be noted that the most important of limitation of this study is the small sample size which is just a fraction of village midwives throughout Demak regency which has reduced the generalizability of the findings. Besides that, the three-day short-term training was probably not sufficient for changing the midwives knowledge, attitudes and practices in preventing HIV/AIDS. Another limitation of this study includes the lack of a control group with another intervention not related to HIV prevention programs to examine the effect of the training program used in the intervention group.

Commented [ZS15]: Referee 1 comment no.6 the limitation of this study has been mentioned in the text

5. CONCLUSIONS

Training midwives in HIV prevention was a beneficial program and positively impacted knowledge, attitudes, and practices in the early detection of HIV cases for pregnant women and reproductive age groups and HIV prevention programs. Differences in knowledge, attitudes, and practices occurred significantly in the group interventions compared with the control. Increased practice scores in the intervention group occurred from pre-test-post-test 1 - post-test 2, unlike in control group. The adjustment model shows that the magnitude of the treatment effect only for the knowledge score increase of 7.79 % of the baseline mean knowledge. This study suggests the need more comprehensive training for village midwives and applying the training results to their routine activities especially those related to early HIV detection in women risk groups and pregnant women.

Commented [ZS16]: Referee 2 comment on : the magnitude effect in adjustment model has been added in the conclusion

ACKNOWLEDGMENT

The authors are grateful to the health officers at Demak District Health Office, Central Java Province, for their permission and help in conducting the research. Furthermore, the authors of the Faculty of Public Health at Diponegoro University for permitting this study. Special thanks to all midwives for their kind support and participation.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

References

1. The Asean Secretariat . HIV in The Asean Region. 2016.
2. Eka E, Siti Yuyun R, Titis K. Life Experiences of Women (Housewives) Diagnosed Hiv – Aids in Serang. KnE Life Sciences. 2019;4(13).
3. Eunice, O-M. Knowledge, attitudes, and practices (KAP) of midwives and nurses at the 37 military hospitals towards the management of pregnant women with HIV and AIDS: University of Ghana; 2019.
4. WHO. Mother-to-child transmission of HIV. 2022.
5. Triyana M. The effects of Indonesia's 'Midwife in the Village' programme 10 years post-launch. Population Studies. 2016;70(3):365-76.
6. Meilani N, Setiyawati N, Barasa SO. Midwife's Role in the Mother-to-Child Transmission Prevention Program in Primary Health Care in Yogyakarta. Kesmas: National Public Health Journal. 2019;14(2).
7. Demak District Health Office. Demografi Health Survey Demak Regency. 2020.
8. Demak District Health Office. report on adolescent childbirth in. 2014.
9. Geter A, Herron AR, Sutton MY. HIV-Related Stigma by Healthcare Providers in the United States: A Systematic Review. AIDS Patient Care and STDs. 2018;32(10):418-24.
10. Fauk NK, Ward PR, Hawke K, Mwanri L. HIV Stigma and Discrimination: Perspectives and Personal Experiences of Healthcare Providers in Yogyakarta and Belu, Indonesia. Front Med (Lausanne). 2021;8:625787.
11. Dong X, Yang J, Peng L, Pang M, Zhang J, Zhang Z, et al. HIV-related stigma and discrimination amongst healthcare providers in Guangzhou, China. BMC Public Health. 2018;18(1).
12. Yuvaraj A, Mahendra VS, Chakrap V, Yunihastuti E, Santella AJ, Ranauta A, et al. H IV and stigma in the healthcare setting. Oral Diseases. 2020;26(S1):103-15.
13. Qonitatillah J, Handayani S, Ernawati E, Rusli M. Lower Perceived-Stigmatization By Health Workers Among Hiv-Aids PatientsOf Key Population Backgrounds. Indonesian Journal of Tropical and Infectious Disease. 2020;8(2):90.
14. Pan C, Wang H, Chen M, Cai Y, Li P, Xiao C, et al. Stress and Coping in Nurses Taking Care of People Living with HIV in Hunan, China: A Descriptive Qualitative Study. Neuropsychiatric Disease and Treatment. 2022;Volume 18:303-15.
15. Z T, Sh M, Karimollahi M. Nurse's Experiences of Caring for Patients with HIV/AIDS in Ardabil, Iran. HIV: Current Research. 2017;02.
16. Baker C, Limato R, Tumbelaka P, Rewari BB, Nasir S, Ahmed R, et al. Antenatal testing for anaemia, HIV and syphilis in Indonesia – a health systems analysis of low coverage. BMC Pregnancy and Childbirth. 2020;20(1).
17. Liem A, Adiyanti MG. "Bidan cantik": Psychoeducation on HIV and AIDS to improve the service quality of midwives at Yogyakarta public health center. HIV & AIDS Review. 2013;12(1):14-22.
18. Faul F, Erdfelder E, Lang AG, Buchner A. G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behav Res Methods. 2007;39(2):175-91.
19. Yasin A, Köksal Yasin Y, Karakoç Demirkaya S. Pathological Internet Use, Aggression, and Cyberbullying in Children and Adolescents With Attention Deficit Hyperactivity Disorder. Alpha Psychiatry. 2022;23(2):67-73.
20. Lemeshow S, World Health Organization. Adequacy of sample size in health studies. Chichester England ; New YorkNew York, NY, USA: Published on behalf of the World Health Organization by Wiley ;Distributed in the U.S.A., Canada, and Japan by Liss; 1990. xii, 239 p. p.
21. Hivner EA, Hoke AM, Francis EB, Lehman EB, Hwang GW, Kraschnewski JL. Training teachers to implement physical activity: Applying social cognitive theory. Health Education Journal. 2019;78(4):464-75.
22. Indonesian Health Ministry. HIV/AIDS and IMS control program in primary healthcare. 2017.
23. Mo, Phoenix K. H, Ng, Charlson T. Y. Stigmatization among people living with HIV in Hong Kong: A qualitative study. Health Expectations. 2017;20(5):943-51.
24. Feyissa GT, Lockwood C, Woldie M, Munn Z. Reducing HIV-related stigma and discrimination in healthcare settings: a systematic review of guidelines, tools, standards of practice, best practices, consensus statements and systematic reviews. Journal of Multidisciplinary Healthcare. 2018;Volume 11:405-16.

25. Ishak NC, Shahar HK, Manaf RA. Interventions to Reduce HIV-related Stigma in the Healthcare Settings: A Scoping Systematic Review. Malaysian Journal of Medicine and Health Sciences. 2020;6(1):284-90.
26. Melis T, Fikadu Y. Magnitude and determinants of male partner involvement in PMTCT service utilization of pregnant women attending public health facilities of Ethiopia, 2021: a systematic review and meta-analysis. AIDS Research and Therapy. 2022;19(1).
27. Pratiwi Sa. Implementation of Prevention of Mother to Child Hiv Transmission Programs in The Antenatal Care Services by Midwife in The Health Center of Wringin Resources in Bondoso. The International Journal of Health, Education and social. 2020;3(7):37-47.
28. Nkwabong E, Meboulou Nguel R, Kamgaing N, Keddi Jippe AS. Knowledge, attitudes and practices of health personnel of maternities in the prevention of mother-to-child transmission of HIV in a sub-Saharan African region with high transmission rate: some solutions proposed. BMC Pregnancy and Childbirth. 2018;18(1).

6. Second Rebuttal Letters

2nd Rebuttal Letter

Michael I. Bukrinsky, MD, PhD

Editor-in-Chief,

The Open AID Journal

Dear Dr. Bukrinsky,

Thank you for reinviting us to submit a second revised draft of our manuscript entitled "Short-term Effect of training in increasing midwives' knowledge, attitudes, and practices related to HIV and AIDS prevention" to The Open AIDS Journal. We also appreciate the time and effort you and the reviewer have dedicated to providing feedback on ways to improve our paper. Thus, it is with great pleasure that we resubmit our article for further consideration.

We have incorporated changes that reflect the detailed suggestions the reviewer has graciously provided. To facilitate our revisions, the following is a point-by-point response to the questions and comments in last week's letter. We have the color-coded revised manuscript in red color.

The authors wish this version will satisfy the editor and reviewer and meet all standards of the journal.

Since the authors are from a non-English speaking country, the manuscript needs professional editing to meet the criteria required by The Open AIDS Journal. Thus, we would like to utilize The English language correction service at Bentham. Thank you again, hope these revisions persuade you to accept our submission.

Sincerely,

Zahroh Shaluhiyah

Corresponding Author

Faculty of Public Health, Diponegoro University, Semarang, Indonesia

Jl Prof Dr Soedharto SH Tembalang, Semarang, Central Java, Indonesia

E-mail address: Shaluhiyah.zahroh@gmail.com

REVIEWER COMMENTS:

Reviewer General comment:

I welcome the more details provided of the study population.

However, I remain confused as to what happened for the control group midwives. It seems they also received the intervention (last sentence in first paragraph under 2.1 Intervention).

Authors' response:

Thank you for your comments. The control group did not receive the intervention during this study. However, after the completion of this study, the training was provided to the control group with a similar quantity and quality.

Reviewer's comment:

The intervention effect under 2.2 Statistical Analysis is defined as the difference in the increase from the pre-test-scores in the two groups. How can this be? What does Figure 2 (control group practice score is the same at each time point) mean?

Authors' response:

Thank you for your comment. I have removed figure 2.

Reviewer's comment:

P-values in Table 2 need to be checked. The few I calculated were completely wrong. For example, I compute p-values 0.152 instead of 0.319 for "Experience with PLWHA", 0.041 instead of 0.411 for "HIV Early detection of pregnant women", 0.024 instead of 1.000 for "Counselling for unwanted pregnancy to adolescents". Similarly, I cannot replicate the p-values from the 2-sample t-tests in Tables 1 or 3

Authors' response:
Thank you for pointing this out. We have rechecked and recalculated the p-values in tables 1, 2, and 3 by using the formula of Chi-square, independent T-Test manually in Excel.
The p-values of Tables 1,2 and 3 have been revised.

Reviewer's comment:

The authors describe how they fitted binary models for Table 6 assigning 0 for scores less than the overall mean and 1 for scores above the mean and then applied logistic regression. Given that the

original score is a continuous measure why not fit a simple regression model with the original practice score as the dependent variable? The authors' interpretation of an odds ratio as a risk ratio is WRONG. I cannot believe a 21-fold increase in the odds ratio in any case. This is an extremely large effect and is very difficult to interpret.

Authors' response:

Thank you for bringing this point to our attention. As suggested, we have changed the analysis of table 6 by using a simple linear regression model with the original practice score as the dependent variable and knowledge and attitudes as independent variables. its results have been shown in revised table 6.

7. Second Revise

is conveyed to correctly use universal precautions in treating the patient [13, 14]. The results also show that health workers who treat HIV patients will be shunned by their socio-environment, including family, and colleagues [14]**.** A study in Indonesia also found that health workers were shunned by colleagues, family, and friends in the neighborhood for working with HIV patients. Another study found that health workers still fear HIV, thus, they avoid caring for the patients [10, 15]. In recent years, though there have been efforts to prevent HIV transmission from mother to child in Central Java Province, which is integrated into antenatal care services, HIV cases among pregnant mothers remain increasing. The previous study shows that midwives tend to refuse to serve pregnant mothers who was suspected as being infected by HIV [16]. They would instantly refer the suspected mother to hospital due to fear of contracting the disease. Lack of Knowledge and misinformation on HIV causes including negative attitude towards people living with HIV among midwives remain high [17].This study was conducted to improve ANC services related to HIV and AIDS prevention including reducing stigma at the village level by enhancing village midwives' knowledge, attitudes, and practices. Furthermore, it examines the short-term training effect of midwives' knowledge, attitudes, and HIV and AIDS prevention procedures.

Commented [ZS5]: Referee 1 comment no 2, statement of Riau study has been deleted and revised, cited from reference no 16

2. MATERIAL AND METHODS

The study employed a quasi-experimental design with a comparison group baseline and end-line measurements using non-random assigned intervention and control groups at Demak regency. There are 27 health centres throughout Demak regency, with total number of village midwives were 269 persons [7].On average, there are 10 village midwives for each health centres. Ten health centres were selected purposively with inclusion criteria: the highest incidence of HIV cases at pregnant mothers and children, and the highest number of high-risk men. The village midwives at selected health centres who never attended HIV training and willing to participate were involved in this study. The participants recruitment shows as follows:

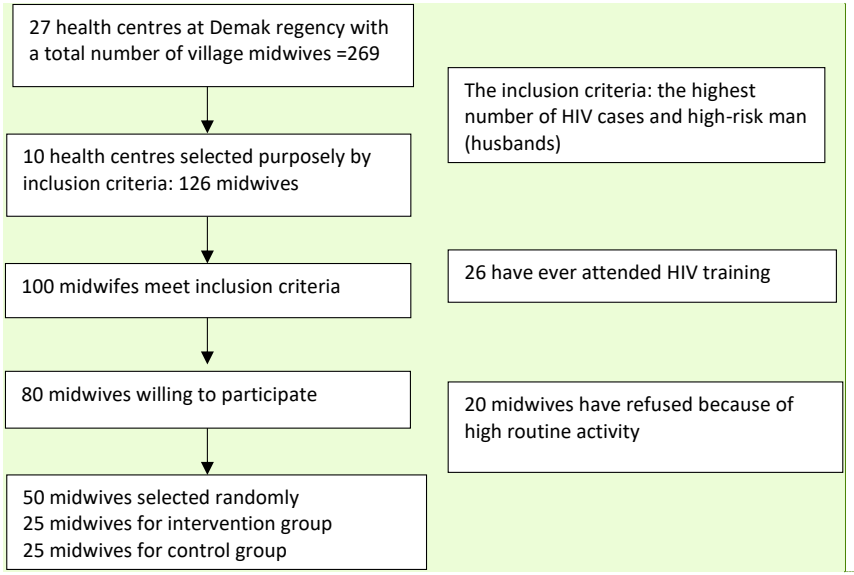

Figure 1. Participant Recruitment

The sample size was calculated using the Lemeshow formula by assuming of confidence interval of 95% and a power of 80%; [18-20] in addition to minimum difference of two KAP before and after intervention, resulting in a minimum sample was 22 each. Considering the possibility of drop out during intervention, the researchers selected to invite of a total 50 midwives who met the inclusion criteria to participate in this study. The experimental and control groups were carefully selected to avoid the possibility of contact across the group and to prevent risk of contamination. Then, five midwives were recruited randomly at each health centre to participate in this study. Therefore, the intervention and control groups consisted of 25 midwives, respectively.

The study was conducted from July 2019 until September 2019, and the participants signed an informed consent form before observation. The Ethical Review Board of the Faculty of Public Health at Diponegoro University, Semarang, Indonesia approved the study protocol with No. 195/EC/FKM/2019.

2. 1. Intervention Procedures

Commented [ZS6]: Referee 1 comment no.3 the description of the recruitment of the midwives has been described in detail including how the participants recruited at figure 1

Commented [ZS7]: Referee 2 comment in the sample size has been corrected and described in more detail

Training intervention for midwives consisted of three days with ten sessions focused on basic information, including the HIV epidemic. Day first consists of lecturing and discussing HIV/AIDS awareness and attitudes, transmission and infection control, navigating the stigma, discrimination, psycho-social impact of HIV/AIDS, the roles of midwives and practices with mothers, addressing trauma, and social support issues related to ANC HIV testing. The following day is simulation and role-playing, including a discussion of cases and testimony from people living with HIV/AIDS, and day third is a practicum, fieldwork, and case analysis. During training all participants were provided snacks and lunch. At the end of the 3-day training, they were provided the compensation of 3 days transportation and incentive fees including educational materials. Classes were held in District Health Office. Although the control group did not receive the HIV training intervention along with the intervention group, but after completion of the study, the training was provided to the control group with a similar quantity and quality, including the same compensation.

A five-person team collected data, including health personnel and research. The instrument was a standardized, interviewed-administered questionnaire adapted from WHO. It consists of (1) Sociodemographic characteristics such as sex, age, duration of being a midwife, and experience in handling HIV/AIDS patients. (2) Knowledge regarding HIV/AIDS as assessed by 25 close-ended questions. The question is such as " PITC refers to HIV testing and counselling which is recommended by health providers to persons who has HIV risk behaviour ", answer: yes (1) or no (0), (3) attitudes towards HIV/AIDS prevention including universal precautions used and stigma by 10 questions. For example "During ANC services, a midwife has to ask the pregnant mother to do HIV testing" answer: strongly agree (2), agree (1) and neutral (0), disagree (0). (4) midwives' practices to prevent HIV/AIDS are assessed by 15 questions. The question example is: "I always do HIV counselling for pregnant women during ANC services". For each knowledge question, the score is one point for the correct answer and zero for the incorrect one, and the possible score ranges from 0-25. Each attitude statement was scored from 2 for the most positive attitude to zero for the most negative and the possible score range 0-20. Respondents selected one choice ranging from strongly agree and disagree. For practice questions, one point is awarded for the practice and none for the not practice and the possible score ranges 0-15.

The questionnaire was validated with pilot testing to check the validity and reliability of 30 midwives in six other health centres in the Demak district. The pilot testing result was good reliability with a Cronbach alpha of more than 0.82. Furthermore, sociodemographic characteristics variables of both groups were administered before intervention and compared between the two groups to identify confounding variables. Variables of knowledge, attitudes, and practices related to HIV/AIDS prevention were administered baseline and after the intervention.

2. 2. Statistical Analysis

Univariate analysis was employed to describe means, median, frequencies, percentages, and standard deviations for sociodemographic data, knowledge regarding HIV/AIDS, attitudes, and practices related to HIV prevention, including universal precautions. The difference scores in baseline data between the independent variables of the intervention and control group were tested by Chi-squares for dichotomous and independent t-tests for continuous variables. At each follow-up/end-line time, the magnitude of the intervention effect is counted through the difference between the intervention and control groups in the mean score change. This is shown in the formula below:

The intervention effect = (Post-test–Pre-test) intervention – (Post-test–Pre-test) control groups

Commented [ZS8]: Referee 1 comment no 3 about the compensation and incentive has been elaborated

Referee 2 comment on the intervention for control group has been described.

Commented [ZS9]: Referee 1 comment no.4 the questions from assessment of 3 main variables have been provided in the text, including the score of each variable

Linear mixed models were employed to quantify and test the statistical significance of intervention effects on knowledge and attitude scores at post-test and follow-up time. Unadjusted and adjusted fixed effects models in follow-up and intervention times were tested. Each model included the repeated measure, the respondent as an individual subject, with an unstructured covariance type. The variables' characteristics, including experience in caring for PLWHA, counselling, referring to hospital, home visits, and educating HIV pregnant women show homogenous between intervention and control groups before intervention. Therefore, no covariate variable should be adjusted to a fixed effects model. In addition, the association between practice scores as a dependent variable, and knowledge, and attitudes as independent variables was also tested by simple linear regression. SPSS v21 was employed for running statistical analyses.

Commented [ZS10]: Reviewer suggestion: the statistical analysis has been revised using simple linear regression model

Commented [ZS11]: Referee 2 comments on logistic regression process. It also has been described

3. RESULTS

In the intervention and control groups, the independent variables' knowledge, attitudes, and practices related to HIV/AIDS prevention were measured before, one month after, and two months after. Categorical and Continuous independent variables are summarized and compared between the intervention and control groups before intervention (table 1 and 2, respectively).

Table 1. Baseline Characteristics compared between the intervention and control group for age and length of working (continuous independent variables)

Characteristics	Intervention Group (n = 25),		Control Group (n = 25),		p-value
	Mean	SD	Mean	SD	
Age (Y)	35.6	5.976	35.20	5.259	0.401
Length of working (Y)	13.56	6.427	13.12	6.294	0.403

Note: By independent t-test

Commented [ZS12]: The p-values have been rechecked and recalculated

The statistical result using the independent T-Test showed that the prevalence of variable age of respondents and length of work between the intervention and control group have no differences. The average age of midwives is around 35 years old, and the length of employment is 13 years, meaning most respondents have worked relatively for a long time.

Table 2. Characteristic differences in intervention and control groups before intervention

Characteristics	Intervention Group (n = 25),n (%)	Control Group (n = 25), n (%)	p-value
Education			
3-years Diploma	14 (56)	17 (68)	
4-years Diploma	9 (36)	8 (32)	0.185
Master graduates	2 (8)	0 (0)	
Experience in PLWHA care			
Have experience	12 (48)	17 (68)	0.137
Have no experience yet	13 (52)	8 (32)	

Commented [ZS13]: Referee 2, table of education has been explained

HIV Early detection of pregnant women			
Have experience	12 (48)	19 (76)	0.061
Have no experience yet	13 (52)	6 (24)	
Counselling for unwanted pregnancy to adolescents			
Have experience	22 (88)	15 (60)	0.029
Have no experience yet	3 (12)	10 (40)	
Referring pregnant women at HIV risk to hospital			
Have experience	5 (20)	6 (24)	0.299
Have no experience yet	20 (80)	19 (76)	
Home visit to HIV patient			
Have experience	5 (20)	6 (24)	0.299
Have no experience yet	20 (80)	19 (76)	
Mentoring HIV patients as case managers			
Have experience	1 (4)	6 (24)	0.137
Have no experience yet	24 (96)	19 (76)	
HIV education for pregnant women			
Have experience	22 (88)	18 (72)	0.106
Have no experience yet	3 (12)	7 (28)	

Commented [ZS14]: Referee 2 comment: the data has been misplaced, and now has been corrected

The Chi-Square Test showed that the education of respondents and the prevalence of variables related to experience with HIV care, early detection, referring HIV patient, home visit, and education were homogenous between the two groups, except the experience in counselling for unwanted pregnancy of adolescents was statistically significantly higher in the intervention group than the control group with p-value 0.029 (table 2). Thus, the intervention effect on knowledge, attitudes and practices were adjusted for this variable. No other baseline data significantly differed between the groups. Questions related to knowledge, attitude, and practices were measured before, one month after (follow-up 1), and 2 months after the intervention (follow-up 2).

Commented [ZS15]: It has been added

Short-term Effect of training in increasing midwives' knowledge, attitudes, and practices related to HIV and AIDS prevention

Zahroh Shaluhiyah[1*], Antono Suryoputro[2], Delita Septialti[3]
[1] Department of Health Promotion and Behavioural Sciences, Faculty of Public Health, Diponegoro University
[2] Department of Health Administration and Policy, Faculty of Public, Health Diponegoro University
[3]Master's of Health Promotion, Faculty of Public Health, Diponegoro University

Email: shaluhiyah.zahroh @gmail.com

ABSTRACT

Introduction: The study aims to analyse the effect of the training intervention program on midwives' HIV-related knowledge, attitudes, and practices in Central Java. The training focused on HIV epidemiology, transmissions, co-infections, PITC, risk contacts, and prevention of mother-to-child transmission (PMTCT). It was designed to improve midwives' knowledge, positive attitudes, and HIV/AIDS prevention practices, including reducing fear and stigma concerning people living with HIV/AIDS (PLWHA).

Material and methods: This study employed a Quasi-experimental pre-post-test design. The respondents are 50 village midwives equally divided into experimental and control groups. Data were collected using a questionnaire adapted from WHO, and it included questions about participant demographic characteristics, knowledge, attitudes, and practices on HIV and AIDS prevention programs. Furthermore, training consists of lecturing, group discussion, simulation, conversation with PLWHA, and watching a film about HIV including practicum.

Results: There was a positive effect on midwife knowledge, attitudes, and practices in the early detection of HIV cases for pregnant women and reproductive age groups and HIV/AIDS prevention programs. The improvement in knowledge, attitudes, and practices occurred significantly in the intervention compared to the control. The adjustment intervention effects were beneficial and statistically significant (p-value <0.05), particularly the magnitude of the treatment effect for the knowledge score, increased of 7.73% of the baseline mean knowledge. There was a significant association between knowledge and practices with a p-value of 0.002.

Conclusion: Training midwives in HIV prevention was a beneficial program and positively impacted knowledge, attitudes, and practices. This study recommended the need for comprehensive training for village midwives, especially those related to their tasks in HIV prevention.

Keywords: HIV training, midwives, knowledge, attitudes, practices

Commented [ZS1]: Referee 2 comment: the magnitude of the treatment has been added in the abstract

Commented [ZS2]: It has been revised

1. INTRODUCTION

The Human Immunodeficiency Virus (HIV) epidemic in Indonesia has been increasing three times higher compared with many other South East Asian countries. Recent data showed that the prevalence increases in housewives and children more than in critical populations. The higher incidence rate among mothers/housewives is because most husbands are more likely to have sexual relations with commercial sex workers. Most mothers conducted HIV tests when their husbands died, and their children have been getting chronic diseases such as diarrhea, upper respiratory tract infection, and pneumonia [1, 2]

Commented [ZS3]: Referee 2 comment: The acronym of HIV, PMTCT, PITC, VCT have been defined.

Based on WHO recommendations, in the absence of participation in mother-to-child transmission prevention programs (PMTCT), the percentage risk of HIV mothers transmitting the virus to their babies is around 15% to 45%. Therefore, early

detection during pregnancy provides a gateway to preventing children from acquiring HIV from their mothers. HIV test is crucial for encouraging the mother to participate in the PMTCT program. However, voluntary counselling and tests (VCT) in many health services, as one of the efforts to encourage people, including mothers, to be aware of their status voluntarily, has not been utilized optimally. Even though the number of identified high-risk people has increased, fewer have participated in counselling and test. Provider-Initiated HIV (PITC) testing and counselling for pregnant mothers have been introduced and should be provided by health workers, including midwives, as a part of antenatal care (ANC) services. Therefore, midwives had to be educated in HIV prevention, reducing stigma and discrimination, including fear of spreading the disease[3, 4].

The Government of Indonesia launched a village midwife program in 1989 to place a skilled birth attendant in every village to respond to the high rate of maternal mortality.[5] Midwives are the primary sources of reliable health information and role models for potential and pregnant mothers since they provide many maternal and child health services, particularly for the villagers. Midwives have high-intensity interaction with mothers in the MCH clinic and at home compared to other health professions. Instead of providing services, the key role of midwives also includes health promotion related to sexual and reproductive health and HIV/AIDS. Therefore, midwives would play an important role as health educators and promotors to encourage the mother to do HIV tests. However, many midwives lack knowledge and attitudes toward sexuality and HIV/AIDS [6].

Commented [ZS4]: Referee 1 comment no 1 : This paragraph already been revised and paragraph 4 has been incorporated into paragraph 3

Demak Regency reported that the 2021 cumulative number of people HIV infected is about 638 or 0.03% of the total population, including pregnant mothers. In 2014, the data identified only 2 cases, increasing significantly from 2015 until now. Since Regency Health Office recommended that village midwives conduct the PITC approach as routine care of pregnant women in the ANC clinic, they should be educated and trained about HIV/AIDS, primarily PMTCT and PITC. There are 269 village midwives in Demak, and less than 20% have been informed about HIV/AIDS and PMTCT. Stigma and discrimination, including fear of contagion disease, are still high among midwives.[7, 8]

Health providers, including midwives, need information about HIV/AIDS because they lack knowledge about transmission and prevention. One study reported that nearly half, or 42.4%, of health providers, discriminate against patients living with HIV/AIDS (PLWH) in their services, such as doing PLWH isolation and using personal protection equipment when providing services to PLWH. The negative attitudes of health providers include judgments about the moral worth of PLWH [9, 10] and rejection of providing a service because of fear of contagion[11].

A factor that causes the failure of HIV prevention efforts is the high stigma and discrimination against people living with HIV. Stigma makes people with HIV, and their families feel afraid and embarrassed to seek help related to the disease, even refusing to take precautions. Stigma occurs in society and health care [12] , and some health workers prefer to be distant and not offer health care to HIV people. This includes Female Sex Workers, IDUs, and males who have sex with a man. Stigma by health workers occurs because of the anxiety of contracting HIV while treating patients. Based on research conducted in Iran, around 45% and 53% of health workers have poor and moderate attitudes toward people living with HIV. They fear being infected when caring for PLWH patients, making health workers inform their colleagues in writing. This information is conveyed to correctly use universal precautions in treating the patient [13, 14]. The results also show that health workers who treat HIV patients will be shunned by their socio-environment, including family, and colleagues [14]**.** A study in Indonesia also found that health workers were shunned by colleagues, family, and friends in the neighborhood for working with HIV patients. Another study found that health workers still fear HIV, thus, they avoid caring for the patients [10, 15]. In recent years, though there have been efforts to prevent HIV transmission from mother to child in Central Java Province, which is integrated into antenatal care services, HIV cases among pregnant mothers remain increasing. The previous study shows that midwives tend to refuse to serve pregnant mothers who was suspected as being infected by HIV [16]. They would instantly refer the suspected mother to hospital due to fear of contracting the disease. Lack of Knowledge and misinformation on HIV causes including negative attitude towards people living with HIV

among midwives remain high [17].This study was conducted to improve ANC services related to HIV and AIDS prevention including reducing stigma at the village level by enhancing village midwives' knowledge, attitudes, and practices. Furthermore, it examines the short-term training effect of midwives' knowledge, attitudes, and HIV and AIDS prevention procedures.

Commented [ZS5]: Referee 1 comment no 2, statement of Riau study has been deleted and revised, cited from reference no 16

2. MATERIAL AND METHODS

The study employed a quasi-experimental design with a comparison group baseline and end-line measurements using non-random assigned intervention and control groups at Demak regency. There are 27 health centres throughout Demak regency, with total number of village midwives were 269 persons [7].On average, there are 10 village midwives for each health centres. Ten health centres were selected purposively with inclusion criteria: the highest incidence of HIV cases at pregnant mothers and children, and the highest number of high-risk men. The village midwives at selected health centres who never attended HIV training and willing to participate were involved in this study. The participants recruitment shows as follows:

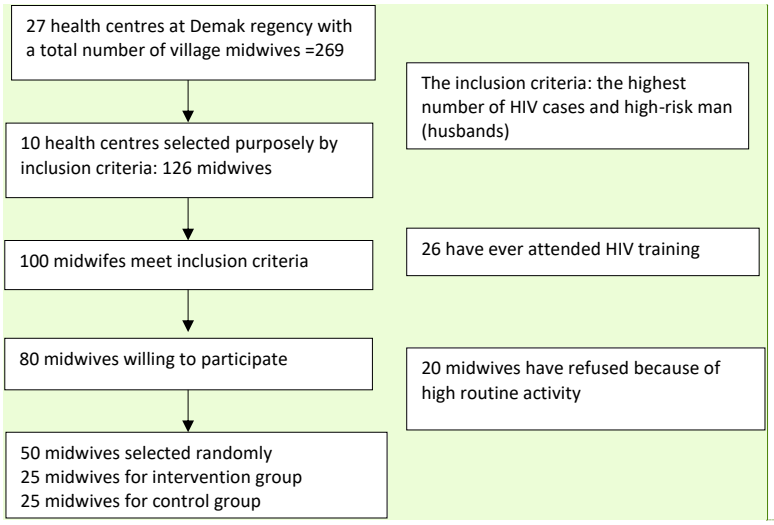

Figure 1. Participant Recruitment

Commented [ZS6]: Referee 1 comment no.3 the description of the recruitment of the midwives has been described in detail including how the participants recruited at figure 1

The sample size was calculated using the Lemeshow formula by assuming of confidence interval of 95% and a power of 80%; [18-20] in addition to minimum difference of two KAP before and after intervention, resulting in a minimum sample was 22 each. Considering the possibility of drop out during intervention, the researchers selected to invite of a total 50 midwives who met the inclusion criteria to participate in this study. The experimental and control groups were carefully selected to avoid the possibility of contact across the group and to prevent risk of contamination. Then, five midwives were recruited randomly at each health centre to participate in this study. Therefore, the intervention and control groups consisted of 25 midwives, respectively.

Commented [ZS7]: Referee 2 comment in the sample size has been corrected and described in more detail

The study was conducted from July 2019 until September 2019, and the participants signed an informed consent form before observation. The Ethical Review Board of the Faculty of Public Health at Diponegoro University, Semarang, Indonesia approved the study protocol with No. 195/EC/FKM/2019.

2. 1. Intervention Procedures

Training intervention for midwives consisted of three days with ten sessions focused on basic information, including the HIV epidemic. Day first consists of lecturing and discussing HIV/AIDS awareness and attitudes, transmission and infection control, navigating the stigma, discrimination, psycho-social impact of HIV/AIDS, the roles of midwives and practices with mothers, addressing trauma, and social support issues related to ANC HIV testing. The following day is simulation and role-playing, including a discussion of cases and testimony from people living with HIV/AIDS, and day third is a practicum, fieldwork, and case analysis. During training all participants were provided snacks and lunch. At the end of the 3-day training, they were provided the compensation of 3 days transportation and incentive fees including educational materials. Classes were held in District Health Office. Although the control group did not receive the HIV training intervention along with the intervention group, but after completion of the study, the training was provided to the control group with a similar quantity and quality, including the same compensation.

Commented [ZS8]: Referee 1 comment no 3 about the compensation and incentive has been elaborated

Referee 2 comment on the intervention for control group has been described.

A five-person team collected data, including health personnel and research. The instrument was a standardized, interviewed-administered questionnaire adapted from WHO. It consists of (1) Sociodemographic characteristics such as sex, age, duration of being a midwife, and experience in handling HIV/AIDS patients. (2) Knowledge regarding HIV/AIDS as assessed by 25 close-ended questions. The question is such as " PITC refers to HIV testing and counselling which is recommended by health providers to persons who has HIV risk behaviour ", answer: yes (1) or no (0), (3) attitudes towards HIV/AIDS prevention including universal precautions used and stigma by 10 questions. For example **"**During ANC services, a midwife has to ask the pregnant mother to do HIV testing" answer: strongly agree (2), agree (1) and neutral (0), disagree (0). (4) midwives' practices to prevent HIV/AIDS are assessed by 15 questions**.** The question example is: "I always do HIV counselling for pregnant women during ANC services"**.** For each knowledge question, the score is one point for the correct answer and zero for the incorrect one, and the possible score ranges from 0-25. Each attitude statement was scored from 2 for the most positive attitude to zero for the most negative and the possible score range 0-20. Respondents selected one choice ranging from strongly agree and disagree. For practice questions, one point is awarded for the practice and none for the not practice and the possible score ranges 0-15.

Commented [ZS9]: Referee 1 comment no.4 the questions from assessment of 3 main variables have been provided in the text, including the score of each variable

The questionnaire was validated with pilot testing to check the validity and reliability of 30 midwives in six other health centres in the Demak district. The pilot testing result was good reliability with a Cronbach alpha of more than 0.82. Furthermore, sociodemographic characteristics variables of both groups were administered before intervention and compared between the two groups to identify confounding variables. Variables of knowledge, attitudes, and practices related to HIV/AIDS prevention were administered baseline and after the intervention.

2. 2. Statistical Analysis

Univariate analysis was employed to describe means, median, frequencies, percentages, and standard deviations for sociodemographic data, knowledge regarding HIV/AIDS, attitudes, and practices related to HIV prevention, including universal precautions. The difference scores in baseline data between the independent variables of the intervention and control group were tested by Chi-squares for dichotomous and independent t-tests for continuous variables. At each follow-up/end-line time, the magnitude of the intervention effect is counted through the difference between the intervention and control groups in the mean score change. This is shown in the formula below:

The intervention effect = (Post-test–Pre-test) intervention – (Post-test–Pre-test) control groups

Linear mixed models were employed to quantify and test the statistical significance of intervention effects on knowledge and attitude scores at post-test and follow-up time. Unadjusted and adjusted fixed effects models in follow-up and intervention times were tested. Each model included the repeated measure, the respondent as an individual subject, with an unstructured covariance type. The variables' characteristics, including experience in caring for PLWHA, counselling, referring to hospital, home visits, and educating HIV pregnant women show homogenous between intervention and control groups before intervention. Therefore, no covariate variable should be adjusted to a fixed effects model. In addition, the association between practice scores as a dependent variable, and knowledge, and attitudes as independent variables was also tested by simple linear regression. SPSS v21 was employed for running statistical analyses.

Commented [ZS10]: Reviewer suggestion: the statistical analysis has been revised using simple linear regression model

Commented [ZS11]: Referee 2 comments on logistic regression process. It also has been described

3. RESULTS

In the intervention and control groups, the independent variables' knowledge, attitudes, and practices related to HIV/AIDS prevention were measured before, one month after, and two months after. Categorical and Continuous independent variables are summarized and compared between the intervention and control groups before intervention (table 1 and 2, respectively).

Table 1. Baseline Characteristics compared between the intervention and control group for age and length of working (continuous independent variables)

Characteristics	Intervention Group (n = 25),		Control Group (n = 25),		p-value
	Mean	SD	Mean	SD	
Age (Y)	35.6	5.976	35.20	5.259	0.401
Length of working (Y)	13.56	6.427	13.12	6.294	0.403

Note: By independent t-test

Commented [ZS12]: The p-values have been rechecked and recalculated

The statistical result using the independent T-Test showed that the prevalence of variable age of respondents and length of work between the intervention and control group have no differences. The average age of midwives is around 35 years old, and the length of employment is 13 years, meaning most respondents have worked relatively for a long time.

Table 2. Characteristic differences in intervention and control groups before intervention

Characteristics	Intervention Group (n = 25),n (%)	Control Group (n = 25), n (%)	p-value
Education			
3-years Diploma	14 (56)	17 (68)	
4-years Diploma	9 (36)	8 (32)	0.185
Master graduates	2 (8)	0 (0)	
Experience in PLWHA care			
Have experience	12 (48)	17 (68)	0.137
Have no experience yet	13 (52)	8 (32)	
HIV Early detection of pregnant women			
Have experience	12 (48)	19 (76)	0.061
Have no experience yet	13 (52)	6 (24)	
Counselling for unwanted pregnancy to adolescents			
Have experience	22 (88)	15 (60)	0.029
Have no experience yet	3 (12)	10 (40)	
Referring pregnant women at HIV risk to hospital			

Commented [ZS13]: Referee 2, table of education has been explained

Have experience	5 (20)	6 (24)	0.299
Have no experience yet	20 (80)	19 (76)	
Home visit to HIV patient			
Have experience	5 (20)	6 (24)	0.299
Have no experience yet	20 (80)	19 (76)	
Mentoring HIV patients as case managers			
Have experience	1 (4)	6 (24)	0.137
Have no experience yet	24 (96)	19 (76)	
HIV education for pregnant women			
Have experience	22 (88)	18 (72)	0.106
Have no experience yet	3 (12)	7 (28)	

Commented [ZS14]: Referee 2 comment: the data has been misplaced, and now has been corrected

The Chi-Square Test showed that the education of respondents and the prevalence of variables related to experience with HIV care, early detection, referring HIV patient, home visit, and education were homogenous between the two groups, except the experience in counselling for unwanted pregnancy of adolescents was statistically significantly higher in the intervention group than the control group with p-value 0.029 (table 2). Thus, the intervention effect on knowledge, attitudes and practices were adjusted for this variable. No other baseline data significantly differed between the groups. Questions related to knowledge, attitude, and practices were measured before, one month after (follow-up 1), and 2 months after the intervention (follow-up 2).

Commented [ZS15]: It has been added

3. 1. Differences between intervention and control groups related to Knowledge, Attitudes, and Practices of PITC before the intervention

Table 3. Differences between intervention and control groups in terms of knowledge, attitudes, and practices before intervention

Variables	Intervention Group (n = 25), Mean (SD)	Control Group (n = 25), Mean (SD)	p-value
Pre-test			
Knowledge	18.20 (2.141)	18.56 (1.356)	0.759
Attitudes	9.88 (0.332)	9.48 (0.714)	0.007
practices	7.56 (2.599)	7.96 (4.363)	0.652

Commented [ZS16]: Referee 2 comment on table 3 has been revised

Commented [ZS17]: Reviewer comments: The p-values have been rechecked and recalculated.

The intervention program was conducted within three days using a classroom setting. Based on the theory of Social Cognitive, the knowledge and attitudes of respondents who receive training will improve by 50% [21]. Descriptive statistics describe the mean, frequency, percentage, and standard deviation for sociodemographic characteristics of respondents, knowledge, attitudes, and practices related to HIV/AIDS prevention.

There is no difference between knowledge and practice scores in the prevention for the control and intervention groups. The respondents have not received HIV/AIDS prevention training for both groups. However, the attitudes mean score was significantly different between the two groups, with a p-value of 0.007. Most respondents have a positive attitude toward HIV prevention. For knowledge, the average score of the intervention and control groups is 18.20 and 18.56, with

Commented [ZS18]: It has been revised

a p-value of 0.759. The practice mean score for the control and intervention groups is slightly higher at 7.96 and 7.56 with a p-value of 0.652

Commented [ZS19]: It has been revised

Commented [ZS20]: It has been revised

Post-test 1 measurement was given shortly after one month of the intervention, and the respondents' knowledge had increased from 18.20 to 20.44. There was a significantly increased knowledge of the intervention group by 2.24 points. Meanwhile, the practice variable in the intervention group increased significantly from 7.56 to 8.04, and the p-value was 0.035. In attitude variables, there is no difference between the intervention and the control groups because the attitude change needs to take longer than the knowledge. The attitudes score slightly increase from pre-test to post-test 1 and post-test 2 with the mean scores were 9.88, 9.89, and 9.95 respectively.

The measurement results of 2 months after the intervention showed increased respondents' knowledge, especially related to counselling communications to HIV patients. The intervention group's knowledge, attitude, and practice variables also increase. In the second post-test, there is a difference between the knowledge and attitude of the intervention and control groups. However, the practice between the control and intervention groups has shown a significant difference. Even though the groups had statistically different practice scores, the increase was lesser than the knowledge score. After two months of intervention, some practices can be accomplished while on the field.

3. 2. Effect of treatment on knowledge and attitudes toward HIV on village midwives in Demak district

Table 4. Absolute magnitudes of unadjusted intervention effects on knowledge, attitude, and practice scores, and intervention effects as percentages of baseline mean scores at follow-up I and II

Score	Overall mean at baseline (Grand mean)	Intervention effects (unadjusted), Follow-up I			Intervention effects (unadjusted), Follow-up II		
		Absolute magnitude (95% CI)	p-value	As % of baseline mean	Absolute magnitude (95% CI)	p-value	As % of baseline mean
Knowledge	19,253	1.500 (0.801-2.199)	0.001	7.79	1.120 (0.421-1.819)	0,002	5.91
Attitude	9,673	0.100 (0,096-2.296)	0.865	2.06	0.040 (-0.273-0.193)	0.734	4.13
Practice	8.080	0.720 (-0.684-2.124)	0.313	8.91	0.240 (-1.164-1.164)	0.736	2.97

Unadjusted intervention effects at post-tests 1 and 2 are shown in Table 4. The intervention was associated with a statistically significant increase in knowledge score with a p-value < 0.05 for both follow-up times. From the baseline to post-test 1, knowledge scores increased by 1.5 points more in the intervention group than in the control group. It represented an intervention-related increase of 7.79 % of the baseline mean knowledge score. The absolute intervention effect on the attitude score was smaller than the knowledge score, although the improvement was very small and statistically insignificant. Since the training is only three days, it needs more time to boost motivation to change the midwife's attitudes toward preventing HIV/AIDS. For the practice score, the absolute intervention effects were larger than the attitude scores, but the proportional increase in the former was smaller. The intervention-related benefit for all dependent variable scores was similar at both follow-up times.

Table 5. Absolute magnitudes of adjusted intervention effects on knowledge score and attitudes' score, and intervention effects as percentages of baseline mean scores at follow-up I and follow-up II

Grand mean Score	Overall mean at baseline (Grand mean)	Intervention effects (adjusted), Follow-up I			Intervention effects (adjusted), Follow-up II		
		Absolute magnitude (95% CI)	p-value	As % of baseline mean	Absolute magnitude (95% CI)	p-value	As % of baseline mean
Knowledge	19.253	1.142 (0,310-1,975)	0.003	5.931	1.489 (0,656-2,321)	0.000	7.733

Practice	8.080	0.240 (-1,481-1,961)	1,000	2,970	0.720(-1,001-1,441)	0,938	8.910

The absence of differing characteristics between the groups did not adjust for all independent variables, except the experience in counselling of adolescent variable. The attitudes score as one of the dependent variables was also a significant difference between the groups at baseline. Therefore, an adjustment model was made without involving these variables to show the magnitude of the treatment effect. Adjustment means knowledge and practice scores at three measurements shown in Table 5. The adjustment intervention effects were beneficial and statistically significant (p-value <0.05) only for the knowledge score increase of 7.73 % of the baseline mean knowledge. It is probably the effect of intervention needs more time to modify attitudes and practices.

Table 6. Association between knowledge and attitudes as independent variables and practices as a dependent variable by simple linear regression after one month of intervention

Variable	B	95% CI	β	t	P value
Constant	-16.288	-30.509—2.067		-2.369	0.027
Knowledge	1.190	0.496-1880	0.595	3.546	0.002
Constant	19.800	-7.878-47.478		1.480	0.152
Attitude	-1.200	-4.022-1.622	-0.180	-0.880	0.388

Note: R^2adjusted for knowledge: 0.325 and attitudes: -0.01 CI=confident interval for B

The findings indicate that knowledge was associated with midwife practices in HIV prevention with p-value of 0.002. It suggests that the higher score of knowledge was willing to practice more in HIV prevention. If the knowledge increases by one point, the average practice increases 1.190 point. However, the attitudes were not associated with midwife practices with p-value is 0.388. In this case, the attitudes variable does not contribute to explaining the midwife practices in HIV prevention.

4. DISCUSSION

This quasi-experimental study was undertaken to measure and assess the effects of training to improve village midwives' knowledge, attitudes, and practices in HIV/AIDS prevention activities in Demak District, Central Java, Indonesia. The treatments were substantially and significantly related to increasing midwives' knowledge, attitudes, and practices. Based on the results, the expected intervention target is to reduce the incidence of HIV transmission in infants infected through their mothers during pregnancy and delivery in the Demak District. This study is expected to reduce stigma among HIV-AIDS patients and increase village midwives' knowledge, attitudes, and practices in HIV prevention.

The intervention combines several components, including training conducted during the three days that include integration practices ANC-PMTCT, demonstration as a way of counselling, and effective communication for pregnant women to examine and prevent HIV. The intervention is targeted to reduce the incidence of HIV in infants whose mothers infect during pregnancy and childbirth. An unsupported understanding of pregnant women with the ability of the village midwife to be the primary helper in counselling and testing can lead to a higher HIV incidence in the infant age group. The midwife's strategic position in carrying out this integration is considered a good foundation and prefix. Early detection of HIV can be unforgettable when midwives perform health checks on pregnant women. The risk of midwives contracting HIV during childbirth is also high [22]. Therefore, training to improve the understanding, awareness, and positive attitudes toward early detection is beneficial. Recognizing the risk of childbearing-age and pregnant women infected with HIV is also needed. A study mentions that intervention in the form of standardized knowledge sharing and contact with people living with HIV for 50 minutes with health workers in Hong Kong can reduce the stigma among health workers [23]. The provision of HIV education, testing, and messages such as brochures, bulletins, and testimony can reduce stigma [6, 24, 25].

The midwives are recognized as responsible and accountable professionals working in partnership with women to provide the necessary support, care, and advice during pregnancy, childbirth, and the postpartum period. The mother-to-child

Commented [ZS21]: Referee 2 comment, on table 5 the overall mean (grand mean) has been revised

Commented [ZS22]: Referee 2, because of attitudes variable is as covariate, so adjustment model made without attitudes

Commented [ZS23]: It has been changed to employing simple linear regression

Commented [ZS24]: Table 6 has been revised by simple linear regression results

HIV early detection factors are a pregnant mother's readiness for HIV testing, husband support, information access, and support from midwives or other health workers [26]. In this regard, health personnel needs support in the form of early HIV detection, PMTCT services, and stigma reduction in PLWHA[27]. For midwives to provide good services to PLWHA, they are required to have complete knowledge. Following the needs of pregnant women regarding HIV / AIDS, knowledge and attitude interventions should be provided to implement knowledge and attitudes in their PMTCT activities [27, 28].

It should be noted that the most important of limitation of this study is the small sample size which is just a fraction of village midwives throughout Demak regency which has reduced the generalizability of the findings. Besides that, the three-day short-term training was probably not sufficient for changing the midwives knowledge, attitudes and practices in preventing HIV/AIDS. Another limitation of this study includes the lack of a control group with another intervention not related to HIV prevention programs to examine the effect of the training program used in the intervention group.

Commented [ZS25]: Referee 1 comment no.6 the limitation of this study has been mentioned in the text

5. CONCLUSIONS

Training midwives in HIV prevention was a beneficial program and positively impacted knowledge, attitudes, and practices in the early detection of HIV cases for pregnant women and reproductive age groups and HIV prevention programs. Differences in knowledge, attitudes, and practices occurred significantly in the group interventions compared with the control. Increased practice scores in the intervention group occurred from pre-test-post-test 1 - post-test 2, unlike in control group. The adjustment model shows that the magnitude of the treatment effect only for the knowledge score increase of 7.79 % of the baseline mean knowledge. This study suggests the need more comprehensive training for village midwives and applying the training results to their routine activities especially those related to early HIV detection in women risk groups and pregnant women.

Commented [ZS26]: Referee 2 comment on : the magnitude effect in adjustment model has been added in the conclusion

ACKNOWLEDGMENT

The authors are grateful to the health officers at Demak District Health Office, Central Java Province, for their permission and help in conducting the research. Furthermore, the authors of the Faculty of Public Health at Diponegoro University for permitting this study. Special thanks to all midwives for their kind support and participation.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

References

1. The Asean Secretariat . HIV in The Asean Region. 2016.
2. Eka E, Siti Yuyun R, Titis K. Life Experiences of Women (Housewives) Diagnosed Hiv – Aids in Serang. KnE Life Sciences. 2019;4(13).
3. Eunice, O-M. Knowledge, attitudes, and practices (KAP) of midwives and nurses at the 37 military hospitals towards the management of pregnant women with HIV and AIDS: University of Ghana; 2019.
4. WHO. Mother-to-child transmission of HIV. 2022.
5. Triyana M. The effects of Indonesia's 'Midwife in the Village' programme 10 years post-launch. Population Studies. 2016;70(3):365-76.
6. Meilani N, Setiyawati N, Barasa SO. Midwife's Role in the Mother-to-Child Transmission Prevention Program in Primary Health Care in Yogyakarta. Kesmas: National Public Health Journal. 2019;14(2).
7. Demak District Health Office. Demografi Health Survey Demak Regency. 2020.
8. Demak District Health Office. report on adolescent childbirth in. 2014.
9. Geter A, Herron AR, Sutton MY. HIV-Related Stigma by Healthcare Providers in the United States: A Systematic Review. AIDS Patient Care and STDs. 2018;32(10):418-24.
10. Fauk NK, Ward PR, Hawke K, Mwanri L. HIV Stigma and Discrimination: Perspectives and Personal Experiences of Healthcare Providers in Yogyakarta and Belu, Indonesia. Front Med (Lausanne). 2021;8:625787.
11. Dong X, Yang J, Peng L, Pang M, Zhang J, Zhang Z, et al. HIV-related stigma and discrimination amongst healthcare providers in Guangzhou, China. BMC Public Health. 2018;18(1).
12. Yuvaraj A, Mahendra VS, Chakrap V, Yunihastuti E, Santella AJ, Ranauta A, et al. H IV and stigma in the healthcare setting. Oral Diseases. 2020;26(S1):103-15.

13. Qonitatillah J, Handayani S, Ernawati E, Rusli M. Lower Perceived-Stigmatization By Health Workers Among Hiv-Aids PatientsOf Key Population Backgrounds. Indonesian Journal of Tropical and Infectious Disease. 2020;8(2):90.
14. Pan C, Wang H, Chen M, Cai Y, Li P, Xiao C, et al. Stress and Coping in Nurses Taking Care of People Living with HIV in Hunan, China: A Descriptive Qualitative Study. Neuropsychiatric Disease and Treatment. 2022;Volume 18:303-15.
15. Z T, Sh M, Karimollahi M. Nurse's Experiences of Caring for Patients with HIV/AIDS in Ardabil, Iran. HIV: Current Research. 2017;02.
16. Baker C, Limato R, Tumbelaka P, Rewari BB, Nasir S, Ahmed R, et al. Antenatal testing for anaemia, HIV and syphilis in Indonesia – a health systems analysis of low coverage. BMC Pregnancy and Childbirth. 2020;20(1).
17. Liem A, Adiyanti MG. "Bidan cantik": Psychoeducation on HIV and AIDS to improve the service quality of midwives at Yogyakarta public health center. HIV & AIDS Review. 2013;12(1):14-22.
18. Faul F, Erdfelder E, Lang AG, Buchner A. G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behav Res Methods. 2007;39(2):175-91.
19. Yasin A, Köksal Yasin Y, Karakoç Demirkaya S. Pathological Internet Use, Aggression, and Cyberbullying in Children and Adolescents With Attention Deficit Hyperactivity Disorder. Alpha Psychiatry. 2022;23(2):67-73.
20. Lemeshow S, World Health Organization. Adequacy of sample size in health studies. Chichester England ; New YorkNew York, NY, USA: Published on behalf of the World Health Organization by Wiley ;Distributed in the U.S.A., Canada, and Japan by Liss; 1990. xii, 239 p. p.
21. Hivner EA, Hoke AM, Francis EB, Lehman EB, Hwang GW, Kraschnewski JL. Training teachers to implement physical activity: Applying social cognitive theory. Health Education Journal. 2019;78(4):464-75.
22. Indonesian Health Ministry. HIV/AIDS and IMS control program in primary healthcare. 2017.
23. Mo, Phoenix K. H, Ng, Charlson T. Y. Stigmatization among people living with HIV in Hong Kong: A qualitative study. Health Expectations. 2017;20(5):943-51.
24. Feyissa GT, Lockwood C, Woldie M, Munn Z. Reducing HIV-related stigma and discrimination in healthcare settings: a systematic review of guidelines, tools, standards of practice, best practices, consensus statements and systematic reviews. Journal of Multidisciplinary Healthcare. 2018;Volume 11:405-16.
25. Ishak NC, Shahar HK, Manaf RA. Interventions to Reduce HIV-related Stigma in the Healthcare Settings: A Scoping Systematic Review. Malaysian Journal of Medicine and Health Sciences. 2020;6(1):284-90.
26. Melis T, Fikadu Y. Magnitude and determinants of male partner involvement in PMTCT service utilization of pregnant women attending public health facilities of Ethiopia, 2021: a systematic review and meta-analysis. AIDS Research and Therapy. 2022;19(1).
27. Pratiwi Sa. Implementation of Prevention of Mother to Child Hiv Transmission Programs in The Antenatal Care Services by Midwife in The Health Center of Wringin Resources in Bondoso. The International Journal of Health, Education and social. 2020;3(7):37-47.
28. Nkwabong E, Meboulou Nguel R, Kamgaing N, Keddi Jippe AS. Knowledge, attitudes and practices of health personnel of maternities in the prevention of mother-to-child transmission of HIV in a sub-Saharan African region with high transmission rate: some solutions proposed. BMC Pregnancy and Childbirth. 2018;18(1).

8. Acceptance Letter

Manuscript Provisional Acceptance letter | BMS-TOAIDJ-2022-18

Inbox

The Open AIDS Journal <admin@bentham.manuscriptpoint.com> Fri, Jan 6, 11:52 AM

to me

Dear Dr. Zahroh Shaluhiyah,

I am pleased to inform you that your article Reference No. BMS-TOAIDJ-2022-18, entitled **"Short-term Effect of training in increasing midwives' knowledge, attitudes, and practices related to HIV and AIDS prevention"** has been provisionally approved for publication in "**The Open AIDS Journal**" journal.

You will now need to pay the processing fee, either via the online payment link in the invoice sent to you or, via a bank transfer (evidence of which would need to be sent to us), before your article is published.

Please note that the final acceptance of your article is subject to a detailed scrutiny and approval of the following:

1. The standard of English language in the articles should be suitable.
2. "IMRAD" Structure: Headings such as Introduction/background, Methods and Materials, Experimental, Result and Discussion are mandatory for research articles.
3. Abstract should be in the format of a STRUCTURED ABSTRACT, having explicit headings such as background, introduction, method, result and conclusion.
4. References should be in the correct format. This will vary from journal to journal.
5. All references mentioned in the reference list should be cited in the text, and vice versa.
6. Permission should have been obtained, for use of copyright material from the appropriate sources (including the Internet) and submitted to us.
7. There should be no difference in the list of Authors in the revised manuscript, from what was submitted at the time of submission of the article. Please remember that the author list cannot be modified at a later stage.

8. If your study involves human or animal subjects, you should have obtained ethical approval. Please state whether Ethical Approval was given, by whom and the relevant Judgement's reference number.

- Ethical Committee Name:
- Guidelines for Human or Animal:

Please ensure that all the above points have been properly taken care of to avoid delays in final acceptance and publication. For any further clarifications, please send your query to info@benthamopen.net

We wish to thank you for submission of the manuscript to "**The Open AIDS Journal**" and look forward to continued collaboration in the future.

With warm regards,

Editorial Office
The Open AIDS Journal
Bentham Open

Note: For complaints contact: complaint@benthamopen.net

To unsubscribe from MPS and stop receiving emails further. Please send an email to unsubscribe@bentham.manuscriptpoint.com.

Powered by Bentham Manuscript Processing System

9. Proofreading Certification

Certificate of Proofreading

This document certifies that the manuscript was edited for proper English language, grammar, punctuation, spelling, and overall style by one or more of the highly qualified native English speaking editors at Good Lingua Center of Education (GLCE)

Manuscript Title

Short-term Effect of Training in Increasing Midwives' Knowledge, Attitudes, and Practices Related to HIV and AIDS Prevention

Author(s)

Zahroh Shaluhiyah, Antono Suryo Putro, Delita Septialti

Date Issued

September 21, 2022

GoodLingua
Translation, editing, and proofreading

PT. Internasional Translasi Edukasi, Jakarta

The Open AIDS Journal

Content list available at: https://openaidsjournal.com

RESEARCH ARTICLE

Short-term Effect of Training in Increasing Midwives' Knowledge, Attitudes, and Practices Related to HIV and AIDS Prevention

Zahroh Shaluhiyah[1,*], Antono Suryoputro[2] and Delita Septialti[3]

[1]*Department of Health Promotion and Behavioural Sciences, Faculty of Public Health, Diponegoro University, Jawa Tengah 50275, Indonesia*
[2]*Department of Health Administration and Policy, Faculty of Public Health, Diponegoro University, Jawa Tengah 50275, Indonesia*
[3]*Master's of Health Promotion, Faculty of Public Health, Diponegoro University, Jawa Tengah 50275, Indonesia*

Abstract:

Introduction:

The study aims to analyse the effect of the training intervention program on midwives' HIV-related knowledge, attitudes, and practices in Central Java. The training focused on HIV epidemiology, transmissions, co-infections, PITC, risk contacts, and prevention of mother-to-child transmission (PMTCT). It was designed to improve midwives' knowledge, positive attitudes, and HIV/AIDS prevention practices, including reducing fear and stigma concerning people living with HIV/AIDS (PLWHA).

Material and Methods:

This study employed a Quasi-experimental pre-post-test design. The respondents are 50 village midwives equally divided into experimental and control groups. Data were collected using a questionnaire adapted from WHO, and it included questions about participant demographic characteristics, knowledge, attitudes, and practices on HIV and AIDS prevention programs. Furthermore, training consists of lecturing, group discussion, simulation, conversation with PLWHA, and watching a film about HIV including practicum.

Results:

There was a positive effect on midwife knowledge, attitudes, and practices in the early detection of HIV cases for pregnant women and reproductive age groups and HIV/AIDS prevention programs. The improvement in knowledge, attitudes, and practices occurred significantly in the intervention compared to the control. The adjustment intervention effects were beneficial and statistically significant (p-value <0.05), particularly the magnitude of the treatment effect for the knowledge score, which increased of 7.73% of the baseline mean knowledge. There was a significant association between knowledge and practices with a p-value of 0.002.

Conclusion:

Training midwives in HIV prevention was a beneficial program and positively impacted knowledge, attitudes, and practices. This study recommended the need for comprehensive training for village midwives, especially those related to their tasks in HIV prevention.

Keywords: HIV training, Midwives, Knowledge, Attitudes, Practices, Diseases.

Article History	Received: October 04, 2022	Revised: December 23, 2022	Accepted: January 05, 2023

1. INTRODUCTION

The Human Immunodeficiency Virus (HIV) epidemic in Indonesia has been increasing three times higher compared with many other South East Asian countries. Recent data showed that the prevalence increases in housewives and children more than in critical populations. The higher incidence rate among mothers/housewives is because most husbands are more likely to have sexual relations with commercial sex workers. Most mothers conducted HIV tests when their husbands died, and their children have been getting chronic diseases such as diarrhea, upper respiratory tract infection, and pneumonia [1, 2]

Based on WHO recommendations, in the absence of participation in mother-to-child transmission prevention programs (PMTCT), the percentage risk of HIV mothers transmitting the virus to their babies is around 15% to 45%. Therefore, early detection during pregnancy provides a gateway to preventing children from acquiring HIV from their

* Address correspondence to this author at the Department of Health Promotion and Behavioural Sciences, Faculty of Public Health, Diponegoro University, Jawa Tengah 50275, Indonesia;
E-mail: shaluhiyah.zahroh@gmail.com

mothers. HIV test is crucial for encouraging the mother to participate in the PMTCT program. However, voluntary counselling and tests (VCT) in many health services, as one of the efforts to encourage people, including mothers, to be aware of their status voluntarily, has not been utilized optimally. Even though the number of identified high-risk people has increased, fewer have participated in counselling and test. Provider-Initiated HIV (PITC) testing and counselling for pregnant mothers have been introduced and should be provided by health workers, including midwives, as a part of antenatal care (ANC) services. Therefore, midwives had to be educated in HIV prevention, reducing stigma and discrimination, including fear of spreading the disease [3, 4].

The Government of Indonesia launched a village midwife program in 1989 to place a skilled birth attendant in every village to respond to the high rate of maternal mortality [5]. Midwives are the primary sources of reliable health information and role models for potential and pregnant mothers since they provide many maternal and child health services, particularly for the villagers. Midwives have high-intensity interaction with mothers in the MCH clinic and at home compared to other health professions. Instead of providing services, the key role of midwives also includes health promotion related to sexual and reproductive health and HIV/AIDS. Therefore, midwives would play an important role as health educators and promotors to encourage the mother to do HIV tests. However, many midwives lack knowledge and attitudes toward sexuality and HIV/AIDS [6].

Demak Regency reported that the 2021 cumulative number of people HIV infected is about 638 or 0.03% of the total population, including pregnant mothers. In 2014, the data identified only 2 cases, increasing significantly from 2015 until now. Since Regency Health Office recommended that village midwives conduct the PITC approach as routine care of pregnant women in the ANC clinic, they should be educated and trained about HIV/AIDS, primarily PMTCT and PITC. There are 269 village midwives in Demak, and less than 20% have been informed about HIV/AIDS and PMTCT. Stigma and discrimination, including fear of contagion disease, are still high among midwives [7, 8].

Health providers, including midwives, need information about HIV/AIDS because they lack knowledge about transmission and prevention. One study reported that nearly half, or 42.4%, of health providers, discriminate against patients living with HIV/AIDS (PLWH) in their services, such as doing PLWH isolation and using personal protection equipment when providing services to PLWH. The negative attitudes of health providers include judgments about the moral worth of PLWH [9, 10] and rejection of providing a service because of fear of contagion [11].

A factor that causes the failure of HIV prevention efforts is the high stigma and discrimination against people living with HIV. Stigma makes people with HIV, and their families feel afraid and embarrassed to seek help related to the disease, even refusing to take precautions. Stigma occurs in society and health care [12], and some health workers prefer to be distant and not offer health care to HIV people. This includes Female Sex Workers, IDUs, and males who have sex with a man. Stigma by health workers occurs because of the anxiety of contracting HIV while treating patients. Based on research conducted in Iran, around 45% and 53% of health workers have poor and moderate attitudes toward people living with HIV. They fear being infected when caring for PLWH patients, making health workers inform their colleagues in writing. This information is conveyed to correctly use universal precautions in treating the patient [13, 14]. The results also show that health workers who treat HIV patients will be shunned by their socio-environment, including family, and colleagues [14]. A study in Indonesia also found that health workers were shunned by colleagues, family, and friends in the neighborhood for working with HIV patients. Another study found that health workers still fear HIV, thus, they avoid caring for the patients [10, 15]. In recent years, though there have been efforts to prevent HIV transmission from mother to child in Central Java Province, which is integrated into antenatal care services, HIV cases among pregnant mothers remain increasing. The previous study shows that midwives tend to refuse to serve pregnant mothers who were suspected of being infected by HIV [16]. They would instantly refer the suspected mother to a hospital due to fear of contracting the disease. Lack of Knowledge and misinformation on HIV causes including negative attitudes toward people living with HIV among midwives remain high [17]. This study was conducted to improve ANC services related to HIV and AIDS prevention including reducing stigma at the village level by enhancing village midwives' knowledge, attitudes, and practices. Furthermore, it examines the short-term training effect of midwives' knowledge, attitudes, and HIV and AIDS prevention procedures.

2. MATERIALS AND METHODS

The study employed a quasi-experimental design with a comparison group baseline and end-line measurements using non-random assigned intervention and control groups at Demak regency. There are 27 health centres throughout Demak regency, with a total number of village midwives were 269 persons [7]. On average, there are 10 village midwives for each health centres. Ten health centres were selected purposively with inclusion criteria: the highest incidence of HIV cases among pregnant mothers and children, and the highest number of high-risk men. The village midwives at selected health centres who never attended HIV training and were willing to participate were involved in this study. The participants' recruitment shows as follows:

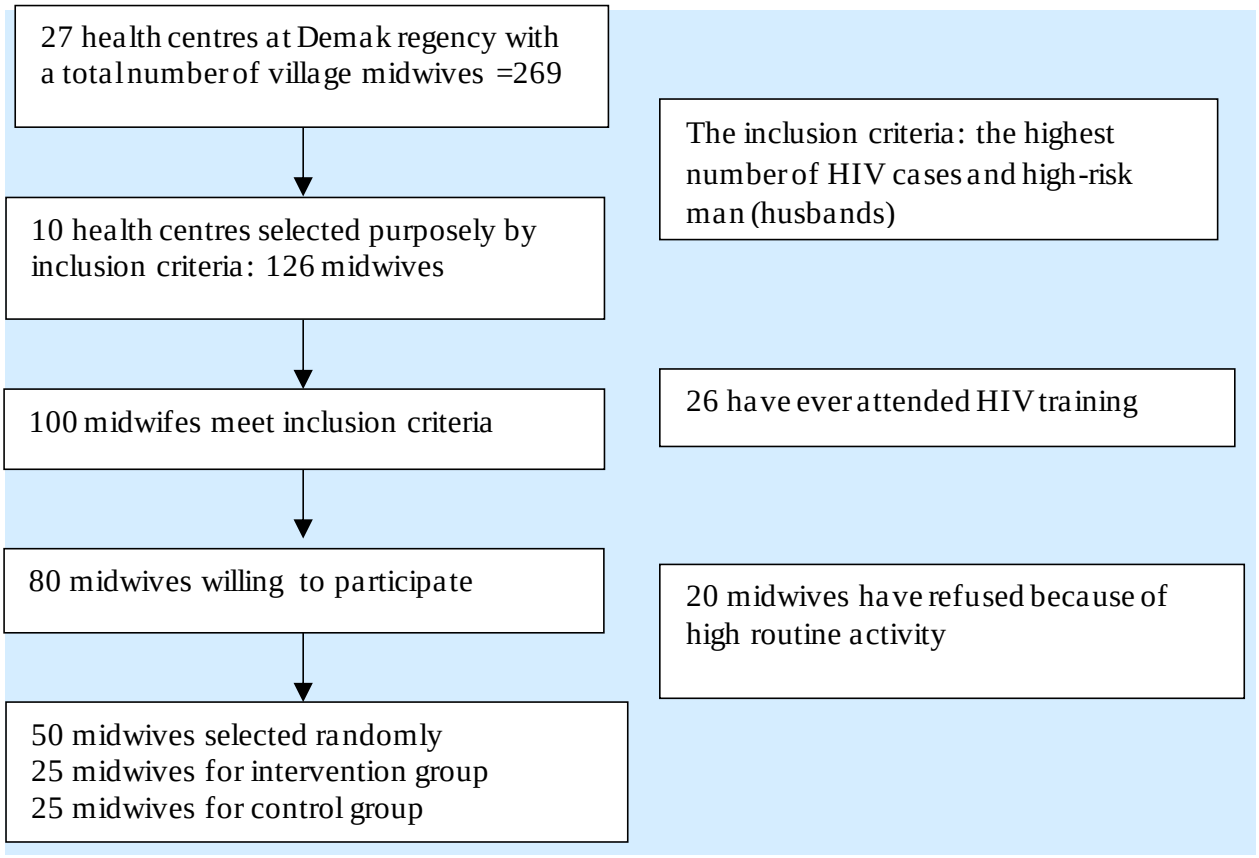

Fig. (1). Participant recruitment.

The sample size was calculated using the Lemeshow formula by assuming of a confidence interval of 95% and a power of 80%; [18 - 20] in addition to a minimum difference of two KAP before and after the intervention, resulting in a minimum sample of 22 each. Considering the possibility of dropping out during intervention, the researchers selected to invite of a total 50 midwives who met the inclusion criteria to participate in this study. The experimental and control groups were carefully selected to avoid the possibility of contact across the group and to prevent the risk of contamination. Then, five midwives were recruited randomly at each health centre to participate in this study.Therefore, the intervention and control groups consisted of 25 midwives, respectively.

The study was conducted from July 2019 until September 2019, and the participants signed an informed consent form before observation. The Ethical Review Board of the Faculty of Public Health at Diponegoro University, Semarang, Indonesia approved the study protocol with No. 195/EC/FKM/2019.

2.1. Intervention Procedures

Training intervention for midwives consisted of three days with ten sessions focused on basic information, including the HIV epidemic. Day first consists of lecturing and discussing HIV/AIDS awareness and attitudes, transmission and infection control, navigating the stigma, discrimination, psycho-social impact of HIV/AIDS, the roles of midwives and practices with mothers, addressing trauma, and social support issues related to ANC HIV testing. The following day is simulation and role-playing, including a discussion of cases and testimony from people living with HIV/AIDS, and day third is a practicum, fieldwork, and case analysis. During training, all participants were provided snacks and lunch. At the end of the 3-day training, they were provided the compensation of 3 days transportation and incentive fees including educational materials. Classes were held in District Health Office. Although the control group did not receive the HIV training intervention along with the intervention group, after completion of the study, the training was provided to the control group with a similar quantity and quality, including the same compensation.

A five-person team collected data, including health personnel and research. The instrument was a standardized, interviewed-administered questionnaire adapted from WHO. It consists of (1) Sociodemographic characteristics such as sex, age, duration of being a midwife, and experience in handling HIV/AIDS patients. (2) Knowledge regarding HIV/AIDS as assessed by 25 close-ended questions. The question is such as " PITC refers to HIV testing and counselling which is recommended by health providers to persons who has HIV risk behaviour ", answer: yes (1) or no (0), (3) attitudes towards HIV/AIDS prevention including universal precautions used and stigma by 10 questions. For example **"**During ANC services, a midwife has to ask the pregnant mother to do HIV testing" answer: strongly agree (2), agree (1) and neutral (0), disagree (0). (4) midwives' practices to prevent HIV/AIDS are assessed by 15 questions**.** The question example is: "I always do HIV

counselling for pregnant women during ANC services”**.** For each knowledge question, the score is one point for the correct answer and zero for the incorrect one, and the possible score ranges from 0-25. Each attitude statement was scored from 2 for the most positive attitude to zero for the most negative and the possible score range 0-20. Respondents selected one choice ranging from strongly agree and disagree. For practice questions, one point is awarded for the practice and none for the not practice and the possible score ranges 0-15.

The questionnaire was validated with pilot testing to check the validity and reliability of 30 midwives in six other health centres in the Demak district. The pilot testing result was good reliability with a Cronbach alpha of more than 0.82. Furthermore, sociodemographic characteristics variables of both groups were administered before intervention and compared between the two groups to identify confounding variables. Variables of knowledge, attitudes, and practices related to HIV/AIDS prevention were administered at baseline and after the intervention.

2.2. Statistical Analysis

Univariate analysis was employed to describe means, median, frequencies, percentages, and standard deviations for sociodemographic data, knowledge regarding HIV/AIDS, attitudes, and practices related to HIV prevention, including universal precautions. The difference scores in baseline data between the independent variables of the intervention and control group were tested by Chi-squares for dichotomous and independent t-tests for continuous variables. At each follow-up/end-line time, the magnitude of the intervention effect is counted through the difference between the intervention and control groups in the mean score change. This is shown in the formula below:

The intervention effect = (Post-test–Pre-test) intervention – (Post-test–Pre-test) control groups

Linear mixed models were employed to quantify and test the statistical significance of intervention effects on knowledge and attitude scores at post-test and follow-up time. Unadjusted and adjusted fixed effects models in follow-up and intervention times were tested. Each model included the repeated measure, the respondent as an individual subject, with an unstructured covariance type. The variables’ characteristics, including experience in caring for PLWHA, counselling, referring to hospital, home visits, and educating HIV pregnant women show homogenous between intervention and control groups before intervention. Therefore, no covariate variable should be adjusted to a fixed effects model. In addition, the association between practice scores as a dependent variable, and knowledge, and attitudes as independent variables was also tested by simple linear regression. SPSS v21 was employed for running statistical analyses.

3. RESULTS

In the intervention and control groups, the independent variables’ knowledge, attitudes, and practices related to HIV/AIDS prevention were measured before, one month after, and two months after. Categorical and Continuous independent variables are summarized and compared between the intervention and control groups before intervention (Tables **1** and **2**, respectively).

Table 1. Baseline characteristics compared between the intervention and control group for age and length of working (continuous independent variables).

Characteristics	Intervention Group (n = 25),		Control Group (n = 25),		p-value
	Mean	SD	Mean	SD	
Age (Y)	35.6	5.976	35.20	5.259	0.401
Length of working (Y)	13.56	6.427	13.12	6.294	0.403

Note: By independent t-test.

Table 2. Characteristic differences in intervention and control groups before intervention.

Characteristics	Intervention Group (n = 25),n (%)	Control Group (n = 25), n (%)	p-value
Education			
3-years Diploma	14 (56)	17 (68)	0.185
4-years Diploma	9 (36)	8 (32)	
Master graduates	2 (8)	0 (0)	
Experience in PLWHA care			
Have experience	12 (48)	17 (68)	0.137
Have no experience yet	13 (52)	8 (32)	
HIV Early detection of pregnant women			
Have experience	12 (48)	19 (76)	0.061
Have no experience yet	13 (52)	6 (24)	
Counselling for unwanted pregnancy to adolescents			
Have experience	22 (88)	15 (60)	0.029
Have no experience yet	3 (12)	10 (40)	
Referring pregnant women at HIV risk to hospital			
Have experience	5 (20)	6 (24)	0.299
Have no experience yet	20 (80)	19 (76)	
Home visit to HIV patient			

(Table 2) contd.....

Characteristics	Intervention Group (n = 25),n (%)	Control Group (n = 25), n (%)	p-value
Have experience	5 (20)	6 (24)	0.299
Have no experience yet	20 (80)	19 (76)	
Mentoring HIV patients as case managers			
Have experience	1 (4)	6 (24)	0.137
Have no experience yet	24 (96)	19 (76)	
HIV education for pregnant women			
Have experience	22 (88)	18 (72)	0.106
Have no experience yet	3 (12)	7 (28)	

The Chi-Square Test showed that the education of respondents and the prevalence of variables related to experience with HIV care, early detection, referring HIV patients, home visits, and education were homogenous between the two groups, except the experience in counselling for unwanted pregnancy of adolescents was statistically significantly higher in the intervention group than the control group with p-value 0.029 (Table **3**). Thus, the intervention effect on knowledge, attitudes, and practices was adjusted for this variable. No other baseline data significantly differed between the groups. Questions related to knowledge, attitude, and practices were measured before, one month after (follow-up 1), and 2 months after the intervention (follow-up 2).

Table 3. Differences between intervention and control groups in terms of knowledge, attitudes, and practices before intervention.

Variables	Intervention Group (n = 25), Mean (SD)	Control Group (n = 25), Mean (SD)	p-value
Pre-test			
Knowledge	18.20 (2.141)	18.56 (1.356)	0.759
Attitudes	9.88 (0.332)	9.48 (0.714)	0.007
practices	7.56 (2.599)	7.96 (4.363)	0.652

The statistical result using the independent T-Test showed that the prevalence of variable age of respondents and length of work between the intervention and control group have no differences. The average age of midwives is around 35 years old, and the length of employment is 13 years, meaning most respondents have worked relatively for a long time.

3.1. Differences between Intervention and Control Groups Related to Knowledge, Attitudes, and Practices of PITC before the Intervention

The intervention program was conducted within three days using a classroom setting. Based on the theory of Social Cognitive, the knowledge and attitudes of respondents who receive training will improve by 50% [21]. Descriptive statistics describe the mean, frequency, percentage, and standard deviation for sociodemographic characteristics of respondents, knowledge, attitudes, and practices related to HIV/AIDS prevention.

There is no difference between knowledge and practice scores in the prevention for the control and intervention groups. The respondents have not received HIV/AIDS prevention training for both groups. However, the attitudes mean score was significantly different between the two groups, with a p-value of 0.007. Most respondents have a positive attitude toward HIV prevention. For knowledge, the average score of the intervention and control groups is 18.20 and 18.56, with a p-value of 0.759. The practice mean score for the control and intervention groups is slightly higher at 7.96 and 7.56 with a p-value of 0.652

Post-test 1 measurement was given shortly after one month of the intervention, and the respondents' knowledge had increased from 18.20 to 20.44. There was a significantly increased knowledge of the intervention group by 2.24 points. Meanwhile, the practice variable in the intervention group increased significantly from 7.56 to 8.04, and the p-value was 0.035. In attitude variables, there is no difference between the intervention and the control groups because the attitude change needs to take longer than the knowledge. The attitudes score slightly increase from pre-test to post-test 1 and post-test 2 with the mean scores were 9.88, 9.89, and 9.95 respectively.

The measurement results of 2 months after the intervention showed increased respondents' knowledge, especially related to counselling communications to HIV patients. The intervention group's knowledge, attitude, and practice variables also increase. In the second post-test, there is a difference between the knowledge and attitude of the intervention and control groups. However, the practice between the control and intervention groups has shown a significant difference. Even though the groups had statistically different practice scores, the increase was lesser than the knowledge score. After two months of intervention, some practices can be accomplished while on the field.

3.2. Effect of Treatment on Knowledge and Attitudes toward HIV on Village Midwives in Demak District

Unadjusted intervention effects at post-tests 1 and 2 are shown in Table **4**. The intervention was associated with a statistically significant increase in knowledge score with a p-value < 0.05 for both follow-up times. From the baseline to post-test 1, knowledge scores increased by 1.5 points more in the intervention group than in the control group. It represented an intervention-related increase of 7.79% of the baseline mean knowledge score. The absolute intervention effect on the attitude score was smaller than the knowledge score, although the improvement was very small and statistically insignificant. Since the training is only three days, it needs more time to boost motivation to change the midwife's attitudes toward preventing HIV/AIDS. For the practice score, the absolute intervention effects were larger than the attitude scores, but the proportional increase in the former was smaller. The intervention-related benefit for all dependent variable scores was similar at both follow-up times.

Table 4. Absolute magnitudes of unadjusted intervention effects on knowledge, attitude, and practice scores, and intervention effects as percentages of baseline mean scores at follow-up I and II.

Score	Overall mean at baseline (Grand mean)	Intervention effects (unadjusted), Follow-up I			Intervention effects (unadjusted), Follow-up II		
		Absolute magnitude (95% CI)	p-value	As % of baseline mean	Absolute magnitude (95% CI)	p-value	As % of baseline mean
Knowledge	19,253	1.500 (0.801-2.199)	0.001	7.79	1.120 (0.421-1.819)	0,002	5.91
Attitude	9,673	0.100 (0,096-2.296)	0.865	2.06	0.040 (-0.273-0.193)	0.734	4.13
Practice	8.080	0.720 (-0.684-2.124)	0.313	8.91	0.240 (-1.164-1.164)	0.736	2.97

Table 5. Absolute magnitudes of adjusted intervention effects on knowledge score and attitudes score, and intervention effects as percentages of baseline mean scores at follow-up I and follow-up II.

Grand mean Score	Overall mean at baseline (Grand mean)	Intervention effects (adjusted), Follow-up I			Intervention effects (adjusted), Follow-up II		
		Absolute magnitude (95% CI)	p-value	As % of baseline mean	Absolute magnitude (95% CI)	p-value	As % of baseline mean
Knowledge	19.253	1.142 (0,310-1,975)	0.003	5.931	1.489 (0,656-2,321)	0.000	7.733
Practice	8.080	0.240 (-1,481-1,961)	1,000	2,970	0.720(-1,001-1,441)	0,938	8.910

Table 6. Association between knowledge and attitudes as independent variables and practices as a dependent variable by simple linear regression after one month of intervention.

Variable	B	95% CI	β	t	P value
Constant	-16.288	-30.509—2.067		-2.369	0.027
Knowledge	1.190	0.496-1880	0.595	3.546	0.002
Constant	19.800	-7.878-47.478		1.480	0.152
Attitude	-1.200	-4.022-1.622	-0.180	-0.880	0.388

Note: R^2adjusted for knowledge: 0.325 and attitudes: -0.01 CI=confident interval for B

The absence of differing characteristics between the groups did not adjust for all independent variables, except the experience in counselling of adolescents variable. The attitudes score as one of the dependent variables was also a significant difference between the groups at baseline. Therefore, an adjustment model was made without involving these variables to show the magnitude of the treatment effect. Adjustment means knowledge and practice scores at three measurements shown in Table **5**. The adjustment intervention effects were beneficial and statistically significant (p-value <0.05) only for the knowledge score increase of 7.73% of the baseline mean knowledge. It is probably the effect of intervention needs more time to modify attitudes and practices.

The findings indicate that knowledge was associated with midwife practices in HIV prevention with a p-value of 0.002. It suggests that the higher score of knowledge was willing to practice more in HIV prevention. If the knowledge increases by one point, the average practice increases by 1.190 points. However, the attitudes were not associated with midwife practices with a p-value is 0.388. In this case, the attitudes variable does not contribute to explaining the midwife practices in HIV prevention (Table **6**).

4. DISCUSSION

This quasi-experimental study was undertaken to measure and assess the effects of training to improve village midwives' knowledge, attitudes, and practices in HIV/AIDS prevention activities in Demak District, Central Java, Indonesia. The treatments were substantially and significantly related to increasing midwives' knowledge, attitudes, and practices. Based on the results, the expected intervention target is to reduce the incidence of HIV transmission in infants infected through their mothers during pregnancy and delivery in the Demak District. This study is expected to reduce stigma among HIV-AIDS patients and increase village midwives' knowledge, attitudes, and practices in HIV prevention.

The intervention combines several components, including training conducted during the three days that include integration practices ANC-PMTCT, demonstration as a way of counselling, and effective communication for pregnant women to examine and prevent HIV. The intervention is targeted to reduce the incidence of HIV in infants whose mothers infect during pregnancy and childbirth. An unsupported understanding of pregnant women with the ability of the village midwife to be the primary helper in counselling and testing can lead to a higher HIV incidence in the infant age group. The midwife's strategic position in carrying out this integration is considered a good foundation and prefix. Early detection of HIV can be unforgettable when midwives perform health checks on pregnant women. The risk of midwives contracting HIV during childbirth is also high [22]. Therefore,

training to improve understanding, awareness, and positive attitudes toward early detection is beneficial. Recognizing the risk of childbearing-age and pregnant women infected with HIV is also needed. A study mentions that intervention in the form of standardized knowledge sharing and contact with people living with HIV for 50 minutes with health workers in Hong Kong can reduce the stigma among health workers [23]. The provision of HIV education, testing, and messages such as brochures, bulletins, and testimony can reduce stigma [6, 24, 25].

The midwives are recognized as responsible and accountable professionals working in partnership with women to provide the necessary support, care, and advice during pregnancy, childbirth, and the postpartum period. The mother-to-child HIV early detection factors are a pregnant mother's readiness for HIV testing, husband support, information access, and support from midwives or other health workers [26]. In this regard, health personnel needs support in the form of early HIV detection, PMTCT services, and stigma reduction in PLWHA [27]. For midwives to provide good services to PLWHA, they are required to have complete knowledge. Following the needs of pregnant women regarding HIV / AIDS, knowledge and attitude interventions should be provided to implement knowledge and attitudes in their PMTCT activities [27, 28].

It should be noted that the most important of limitation of this study is the small sample size which is just a fraction of village midwives throughout Demak regency which has reduced the generalizability of the findings. Besides that, the three-day short-term training was probably not sufficient for changing the midwives' knowledge, attitudes and practices in preventing HIV/AIDS. Another limitation of this study includes the lack of a control group with another intervention not related to HIV prevention programs to examine the effect of the training program used in the intervention group.

CONCLUSION

Training midwives in HIV prevention was a beneficial program and positively impacted knowledge, attitudes, and practices in the early detection of HIV cases for pregnant women and reproductive age groups and HIV prevention programs. Differences in knowledge, attitudes, and practices occurred significantly in the group interventions compared with the control. Increased practice scores in the intervention group occurred from pre-test-post-test 1 - post-test 2, unlike in control group. The adjustment model shows that the magnitude of the treatment effect only for the knowledge score increase of 7.79% of the baseline mean knowledge. This study suggests the need for more comprehensive training for village midwives and applying the training results to their routine activities especially those related to early HIV detection in women risk groups and pregnant women.

LIST OF ABBREVIATION

HIV = Human Immunodeficiency Virus

PMTCT = Participation in Mother-to-child Transmission Prevention Programs

VCT = Voluntary Counselling and Tests

ANC = Antenatal Care

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The Ethical Review Board of the Faculty of Public Health at Diponegoro University, Semarang, Indonesia approved the study protocol with No. 195/EC/FKM/2019.

HUMAN AND ANIMAL RIGHTS

No animals were used for studies that are the basis of this research. All the humans were used in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013 (http://ethics.iit.edu/ecodes/node/3931).

CONSENT FOR PUBLICATION

The participants signed an informed consent form before observation.

AVAILABILITY OF DATA AND MATERIALS

the data that support the findings of this study are available from the corresponding author [S.Z] on special request.

FUNDING

This study was funded by Faculty of Public Health, Diponegoro University.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ACKNOWLEDGMENTS

The authors are grateful to the health officers at Demak District Health Office, Central Java Province, for their permission and help in conducting the research. Furthermore, the authors of the Faculty of Public Health at Diponegoro University for permitting this study. Special thanks to all midwives for their kind support and participation.

REFERENCES

[1] The Asean Secretariat HIV in The Asean Region 2016.

[2] Eka E, Siti Yuyun R, Titis K. Life experiences of women (housewives) diagnosed HIV – AIDS in Serang KnE Life Sciences 2019.

[3] Eunice O-M. Knowledge, attitudes, and practices (KAP) of midwives and nurses at the 37 military hospitals towards the management of pregnant women with HIV and AIDS.University of Ghana 2019.

[4] WHO. Mother-to-child transmission of HIV. 2022.

[5] Triyana M. The effects of Indonesia's 'Midwife in the Village' programme 10 years post-launch. Popul Stud (Camb) 2016; 70(3): 365-76. [http://dx.doi.org/10.1080/00324728.2016.1145728] [PMID: 27310221]

[6] Meilani N, Setiyawati N, Barasa SO. Midwife's role in the mother-to-child transmission prevention program in primary health care in Yogyakarta. Kesmas: Nat Pub Health J 2019; 14(2): 88-94. [http://dx.doi.org/10.21109/kesmas.v14i2.2774]

[7] Demak District Health Office. Demografi Health Survey Demak Regency 2020.

[8] Demak district health office. Report on adolescent childbirth. 2014.

[9] Geter A, Herron AR, Sutton MY. HIV-related stigma by healthcare providers in the united states: A systematic review. AIDS Patient Care

STDS 2018; 32(10): 418-24.
[http://dx.doi.org/10.1089/apc.2018.0114] [PMID: 30277814]

[10] Fauk NK, Ward PR, Hawke K, Mwanri L. HIV stigma and discrimination: Perspectives and personal experiences of healthcare providers in yogyakarta and Belu, Indonesia. Front Med (Lausanne) 2021; 8: 625787.
[http://dx.doi.org/10.3389/fmed.2021.625787] [PMID: 34055824]

[11] Dong X, Yang J, Peng L, *et al.* HIV-related stigma and discrimination amongst healthcare providers in Guangzhou, China. BMC Public Health 2018; 18(1): 738.
[http://dx.doi.org/10.1186/s12889-018-5654-8] [PMID: 29902990]

[12] Yuvaraj A, Mahendra VS, Chakrapani V, *et al.* HIV and stigma in the healthcare setting. Oral Dis 2020; 26(S1)(Suppl. 1): 103-11.
[http://dx.doi.org/10.1111/odi.13585] [PMID: 32862542]

[13] Qonitatillah J, Handayani S, Ernawati E, Rusli M. Lower perceived-stigmatization by health workers among Hiv-Aids patientsof key population backgrounds. Indonesian J Trop Infec Dis 2020; 8(2): 90.
[http://dx.doi.org/10.20473/ijtid.v8i2.15425]

[14] Pan C, Wang H, Chen M, *et al.* Stress and coping in nurses taking care of people living with HIV in Hunan, China: A descriptive qualitative Study. Neuropsychiatr Dis Treat 2022; 18: 303-15.
[http://dx.doi.org/10.2147/NDT.S341151] [PMID: 35210777]

[15] Z Taza kon, Sh M, Karimollahi M. Nurse's experiences of caring for patients with HIV/AIDS in Ardabil, Iran. Cur Res 2017; 2: 1.

[16] Baker C, Limato R, Tumbelaka P, *et al.* Antenatal testing for anaemia, HIV and syphilis in Indonesia – a health systems analysis of low coverage. BMC Pregnancy Childbirth 2020; 20(1): 326.
[http://dx.doi.org/10.1186/s12884-020-02993-x] [PMID: 32471383]

[17] Liem A, Adiyanti MG. "Bidan cantik": Psychoeducation on HIV and AIDS to improve the service quality of midwives at Yogyakarta public health center. HIV AIDS Rev 2013; 12(1): 14-22.
[http://dx.doi.org/10.1016/j.hivar.2013.02.001]

[18] Faul F, Erdfelder E, Lang AG, Buchner A. G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behav Res Methods 2007; 39(2): 175-91.
[http://dx.doi.org/10.3758/BF03193146] [PMID: 17695343]

[19] Yasin A, Köksal Yasin Y, Karakoç Demirkaya S. Pathological internet use, aggression, and cyberbullying in children and adolescents with attention deficit hyperactivity disorder. ALPHA PSYCHIATRY 2022; 23(2): 67-73.
[http://dx.doi.org/10.5152/alphapsychiatry.2021.21431] [PMID: 36426294]

[20] Lemeshow S. Adequacy of sample size in health studies. Chichester England ; New YorkNew York, NY, USA: Wiley, Chichester 1990.

[21] Hivner EA, Hoke AM, Francis EB, Lehman EB, Hwang GW, Kraschnewski JL. Training teachers to implement physical activity: Applying social cognitive theory. Health Educ J 2019; 78(4): 464-75.
[http://dx.doi.org/10.1177/0017896918820558]

[22] Indonesian Health Ministry. HIV/AIDS and IMS control program in primary healthcare 2017.

[23] Mo PKH, Ng CTY. Stigmatization among people living with HIV in Hong Kong: A qualitative study. Health Expect 2017; 20(5): 943-51.
[http://dx.doi.org/10.1111/hex.12535] [PMID: 28195685]

[24] Feyissa GT, Lockwood C, Woldie M, Munn Z. Reducing HIV-related stigma and discrimination in healthcare settings: A systematic review of guidelines, tools, standards of practice, best practices, consensus statements and systematic reviews. J Multidiscip Healthc 2018; 11: 405-16.
[http://dx.doi.org/10.2147/JMDH.S170720] [PMID: 30214222]

[25] Ishak NC, Shahar HK, Manaf RA. Interventions to reduce HIV-related stigma in the healthcare settings: A scoping systematic review. Malaysian J Med Health Sci 2020; 6(1): 284-90.

[26] Melis T, Fikadu Y. Magnitude and determinants of male partner involvement in PMTCT service utilization of pregnant women attending public health facilities of Ethiopia, 2021: A systematic review and meta-analysis. AIDS Res Ther 2022; 19(1): 8.
[http://dx.doi.org/10.1186/s12981-022-00436-5] [PMID: 35172839]

[27] Pratiwi Sa. Implementation of prevention of mother to child hiv transmission programs in the antenatal care services by midwife in the health center of wringin resources in bondoso. Int j health 2020; 3(7): 37-47.

[28] Nkwabong E, Meboulou Nguel R, Kamgaing N, Keddi Jippe AS. Knowledge, attitudes and practices of health personnel of maternities in the prevention of mother-to-child transmission of HIV in a sub-Saharan African region with high transmission rate: Some solutions proposed. BMC Pregnancy Childbirth 2018; 18(1): 227.
[http://dx.doi.org/10.1186/s12884-018-1876-0] [PMID: 29898688]