Evaluating the Effect of a Gender-Based Violence Training for Health Providers in Ermera and Liquica Municipalities, Timor-Leste

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Abstract

Evaluating the Effect of a Gender-Based Violence Training for Health Providers in Ermera and Liquica Municipalities, Timor-Leste

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Introduction: Gender-based violence (GBV) is a pervasive human rights issue affecting the health and wellbeing of its victims. Timor-Leste has one of the highest rates of GBV in the world. Given victims' care-seeking behaviors, health providers are often a first line of defense when it comes to intervening in GBV. This paper evaluates health providers' ability to identify clients experiencing GBV and deliver informed and empathetic care to GBV survivors following an intensive 5-day GBV training (post-intensive) and separately, after a 14-month learning lab training period (endline) implemented in Liquica and Ermera municipalities, Timor-Leste.

Methods: This study examined the changes to health providers' scores from post-intensive period to endline across five domains (GBV knowledge, attitudes, empathy, perceptions of system support, and confidence) following participation in the World Health Organization's

‘Responding to GBV’ training curriculum as adapted for Timor-Leste. A paper-based questionnaire was administered to providers at baseline, following the intensive 5-day training, and again at 14-months following the monthly learning labs training period. The statistical significance of pairwise bivariate comparisons between provider’s baseline, post-intensive and endline scores across the five GBV domains was assessed using Wilcoxon rank sum tests. Multiple linear regression was used to assess change in domain-specific scores from the post-intensive period to the endline after adjustment for covariates.

Results: Seventy-eight providers participated in all three study timepoints (baseline, 5-day and 14-month endline). Using multiple linear regression and adjusting for baseline score only, there was a significant positive relationship between post-intensive score and endline knowledge and empathy domains. After further adjustment for baseline score, sex, age group, profession, and attendance at monthly learning labs, there was improvement in endline score from the post-intensive score for the knowledge, empathy, and confidence domains, however these results were only marginally significant.

Conclusion: The ‘Responding to GBV’ training showed sustained improvements across all domains of the training from baseline to endline, and promise of further improvements to in knowledge, empathy and confidence domains from post-intensive training to endline. Future research using a larger sample size and more robust participant linkages across time will help to confirm whether the 14-month training lab sessions are beneficial.

INTRODUCTION

Gender-based violence (GBV) poses a grave threat to the health and wellbeing of those affected. Within post-conflict settings, its impact is particularly pronounced.[1] GBV, broadly defined, includes harm brought upon individuals based on their gender through mechanisms such as, but not limited to, domestic violence, sexual assault, and child abuse.[2] The World Health Organization (WHO) estimated in 2018 that the lifetime prevalence of physical and/or sexual GBV for ever-married or ever-partnered women 15 years and older was 26% globally, equating to approximately 641 million women worldwide.[3] Past year prevalence of GBV among this population was estimated at 10% globally.[4]

Timor-Leste, a post-conflict setting, has shown varying rates of GBV across recent studies, however, all studies have demonstrated higher rates of GBV compared to other countries. The WHO reported that Timor-Leste placed in the top 14 countries with regard to past year prevalence of GBV, at 28% of women.[3] Rates of past year and lifetime experience of GBV have varied by study, but range from 28-47% and 35-59% respectively.[4,5] The variability in rates is likely due to differences in study design, including the study samples involved and GBV measurement tools employed.[2] As GBV is largely understood to be under-reported in general, some have suggested and with particular reference to the Timor-Leste population, that the higher estimates are likely more accurate.[2] In Timor-Leste, male-perpetrated violence against female intimate partners is the leading form of GBV.[5] In a survey of women aged 15-49 in Timor-Leste who have experienced GBV, 69.7% experienced physical violence and 64.5% experienced sexual violence perpetrated by their current husband.[5]

GBV has substantial and broad impacts on health and wellbeing. On a global scale, GBV leads to a greater burden of disability-adjusted life years amongst women of reproductive age

compared to well-known health risk factors.[6] Women who have experienced GBV have significantly elevated rates of asthma, chronic pain, difficulty sleeping, irritable bowel syndrome, and frequent headaches when compared to women who have not experienced GBV.[7] Additionally, they are more likely to be infected with HIV or experience depression, with 54% and 60% increased risk respectively compared to women not experiencing GBV.[6] Results from a study that used the 2009/2010 Timor-Leste Demographic and Health Survey revealed that women who experienced combined forms of GBV (physical, sexual, and/or emotional violence) in Timor-Leste were 45% more likely to experience the death of one or more children, 76% more likely to have inadequate antenatal care, three to four times more likely to have or be experiencing symptoms consistent with a sexually transmitted infection, and 46% more likely to give birth to a newborn of low birth weight compared to women who had not experienced GBV.[8]

Globally, studies have shown that women who are victims of GBV utilize healthcare more often than women who are not victims of GBV, though these studies have largely been conducted in high-income countries.[9] Health providers play a unique role in responding to GBV, with each patient interaction providing an opportunity to identify women subjected to GBV and intervene. With these increased touchpoints between women who are victims of GBV and the healthcare system, health providers can learn to recognize and identify patients with acute and/or past presentations of GBV, provide immediate and ongoing physical and mental health care, referral to supportive services, and documentation for legal purposes, as needed.[9]

Timor-Leste's government has responded to the high burden of GBV in the country by enacting laws aimed at its prevention. Part of the legislative mandate is the recognition that health providers are important actors against GBV. In 2010, the government enacted the Law Against Domestic Violence, outlawing violence against family members.[2] Additionally, the

government's 2012 National Action Plan on Gender-Based Violence outlined a multi-sectoral approach for addressing GBV in Timor-Leste[8], highlighting the role of the health sector in providing safe, confidential care to victims, with referral to additional services as necessary.[10]

While Timor-Leste has identified the health system as essential in responding to GBV, few health providers have received relevant training to serve in this integral role. Building clinicians' knowledge and skill in responding to GBV, as well as strengthening desirable clinician attitudes toward GBV has been recognized by scholars as a critically important need.[9] A 2021 meta-analysis of GBV training programs for health providers found that training may improve clinician knowledge, attitudes, identification, and self-confidence in responding to GBV 12-months post-training when compared to no training or training as usual.[11] However, most of the studies included in this meta-analysis were U.S.-based, with very few studies originating from low or middle-income countries.[11] Although this meta-analysis showed that trainings may improve GBV-related knowledge and behaviors amongst health providers, there is evidence to suggest that one-time trainings are less effective in improving and maintaining knowledge than trainings with follow-up sessions for reinforcement of content.[12] Additionally, this meta-analysis clearly highlighted that far less evidence exists on the effectiveness of GBV training for health providers in low and middle-income countries.

In line with the government of Timor-Leste's prioritization of reducing GBV combined with an effort to understand the effect of provider training programs in the Timor-Leste context, a local NGO, HAMNASA, implemented a healthcare provider training model in partnership with Timor-Leste's Ministries of Health (MOH) and Social Solidarity and Inclusion (MSSI), and its National Institute of Health (INS). The Harmonia Activity, a three-year USAID-funded project to address GBV in Timor-Leste, was comprised of the resultant healthcare provider training

intervention (‘Responding to GBV’ curriculum) and a separate community microplanning intervention (a community-based approach to changing patriarchal norms through a Plan-Do-Study-Act model). This paper focuses on the ‘Responding to GBV’ arm of the Harmonia Activity.

The goal of the ‘Responding to GBV’ curriculum was to educate health providers in GBV dynamics and shift social norms with the future intent of providing better protection for GBV victims. Evaluating the effectiveness of the ‘Responding to GBV’ training model in shifting knowledge, attitudes, empathy, perceptions of system support, and confidence of healthcare providers provides critical information for developing and implementing effective interventions for a health system response to GBV, particularly in low and middle-income countries and in settings where GBV is more culturally embedded. By understanding the effect of training health providers on GBV through the ‘Responding to GBV’ curriculum, policymakers and practitioners in Timor-Leste can better plan and allocate resources toward the health system response to GBV. The specific aims of this study were:

- **Aim 1:** To assess change in individual health provider scores on each of five outcome domains (knowledge, attitudes, empathy, system support, and confidence) from the post-5-day intensive training to endline after participation in the 'Responding to GBV' training.
- **Aim 2:** To assess whether number of sessions attended during the learning lab training period further explained change in individual health provider knowledge, attitudes, empathy, system support, and confidence domain scores from post-intensive to endline.

METHODS

Study Setting

This observational pre-post intervention study was conducted in two municipalities within Timor-Leste: Ermera and Liquica. Both municipalities border the Timor-Leste capital of Dili. Ermera is a municipality of 136,010 people who reside in 52 distinct villages[13] while Liquica has 78,700 people who reside in 23 distinct villages.[14]

Ermera and Liquica were selected to receive the 'Responding to GBV' intervention due to their high rates of GBV. Based on the 2016 Timor-Leste Demographic and Health Survey, Ermera and Liquica municipalities have some of the highest rates of GBV, with 58% of women aged 15-49 in Ermera and 51% of women aged 15-49 in Liquica ever experiencing physical, sexual, or emotional violence at the hands of a partner.[5]

Study Sample

All health providers in the intervention municipalities were eligible for inclusion in the trainings. Healthcare providers were informed about the availability of the GBV trainings by HAMNASA, INS, MOH, and municipal health authorities who conducted advocacy meetings at each administrative post. Only providers who consented to having their data used for research purposes and completed the study questionnaire for all three timepoints (baseline, post-intensive, and endline) were included in the analysis.

Intervention

The 'Responding to GBV' training curriculum was based on the WHO curriculum, 'Caring for women subjected to violence' and adapted to the Timor-Leste population. The WHO curriculum

is intended to train health providers on identifying women who have experienced GBV and providing them essential, women-centered care and access to local resources.[15] The WHO curriculum places emphasis on the LIVES approach (Listen, Inquire, Validate, Enhance safety and Support) while providing care to women who have experienced GBV.[15] Working with partners at United Nations Population Fund and the National University of Timor-Leste (UNTL), the WHO curriculum was contextualized to the Timor-Leste population. These partners identified the LIVES approach as not translating well to the Timor-Leste setting. Based on the LIVES approach, "hahu relasaun di'ak," which means "begin a good relationship" in Tetum was created. The term translates to "Ha" know the signs of violence, "Hu" ask about problems, "Re" respond with empathy, "La" do not blame the victim, "S" denotes the importance of confidentiality, "Au" to enhance safety, and "N" to provide ongoing support).

Facilitators from HAMNASA and INS were prepared to lead the 'Responding to GBV' training via a training-of-trainers approach. The training-of-trainers was led by trainers from UNTL and La Trobe University who are experienced at training trainers and are familiar with the training curriculum.

Following the training-of-trainers phase, the 'Responding to GBV' health provider trainings were conducted at eleven regional health facilities in the participating municipalities and consisted of an initial 5-day intensive training, followed by eight monthly 'learning lab' sessions carried out at health facilities over a 14-month period. Participants included medical doctors, midwives, and nurses, as well as health facility managers, pharmacists, lab analysts, community health workers, and other positions.

From July to November 2021, eleven intensive trainings took place at health facilities in Ermera and Liquica, training a total of 302 healthcare workers on GBV. These

5-day intensive trainings consisted of 14 two-hour modules on various GBV topics, facilitated by INS and HAMNASA trainers. Learning labs, which were shorter two-hour trainings covering one GBV module each, were held after the 5-day intensive training. The 14 modules in this series were condensed into eight training sessions held during the 14-month training period. The monthly learning lab sessions were facilitated by HAMNASA, INS, and senior municipal health staff.

Study Measures and Data Collection

Study data was collected via paper-based questionnaires at three timepoints during the 'Responding to GBV' intervention. The same questionnaire was administered prior to training (baseline), following the initial 5-day intensive training (post-intensive), and following the 14-months of monthly learning labs (endline).

The study questionnaire was translated from English into Tetum by HAMNASA staff, and then back-translated to English to ensure translation accuracy. Participants were asked on each questionnaire if they consented to the use of their responses for research purposes.

An adaptation of the WHO 'Caring for women subjected to violence' curriculum evaluation tool was used to assess providers across four domains: knowledge, attitudes, confidence, and system support. This evaluation measure consisted of 89 questions, organized into four (of the five studied) outcome domains.

Outcomes of Interest

Knowledge. The knowledge domain included 43 questions, each of which allowed for responses of true, false, or I don't know, for a maximum possible score of 43. Examples of questions included, "there are common injury patterns associated with domestic violence," "it is a healthcare provider's legal duty to help the woman subjected to violence to report it to the police," and "is depression, anxiety, or chronic stress a warning sign that a woman may have been subjected to domestic or sexual violence?". Questions were scored as 1 for correct responses and 0 for incorrect or I don't know responses. The knowledge global domain score was the arithmetic sum of the 43 individual item values; higher scores were indicative of greater GBV-related knowledge.

Attitudes. The attitudes domain included 29 questions measured on four and five-point Likert scales for a maximum possible score of 102. Examples of questions included "domestic violence is a private matter and people outside the family should not interfere", "it is humiliating to patients to question them about abuse", and "it is acceptable for a man to hit his wife or girlfriend if she argues with him." Questions were formulated in both positive and negative terms. For questions using the five-point Likert scale, responses were scored on a scale where positively worded items (where "strongly agree" was the preferred answer) were scored as follows: strongly disagree = 0; disagree = 1; neither agree nor disagree = 2; agree = 3; strongly agree = 4. Conversely, negatively worded items (where "strongly disagree" was the desired response) had their scores reversed to account for the preferred response, with strongly disagree obtaining the highest score of four. For questions using the four-point Likert scale, the desirable response for all questions was "no, it is never acceptable." In this case, responses were scored as follows: "yes, it is

acceptable" = 0; "sometimes it is acceptable" or "I don't know" = 1; "no, it is never acceptable" = 2. The attitudes global domain score was the arithmetic sum of the 29 individual item values. Higher global attitude scores were indicative of more desirable health provider attitudes toward GBV and their role in responding to GBV.

Confidence. The confidence domain included 10 questions measured on a five-point Likert scale for a maximum possible score of 40. Examples of questions included asking health providers if they felt prepared to, "identify a woman who has been subjected to violence by signs and symptoms she reports", "offer supportive statements to a women subjected to domestic violence or sexual assault", and "to assess the immediate level of danger for a woman or child after sexual assault or domestic violence." Responses were scored as follows: not at all prepared = 0; slightly prepared = 1; somewhat prepared = 2; sufficiently prepared = 3; and quite well prepared = 4. The confidence global domain score was the arithmetic sum of the 10 individual item values. Higher global confidence scores were indicative of greater confidence in identifying and caring for women subjected to violence.

System Support. The system support domain included six questions, each assessed with responses of yes, no, or I don't know, for a maximum possible score of six. Examples of questions included, "I can readily look up information (e.g. either a guide or standard operating procedure) on how to manage cases of domestic violence or sexual assault" and "my supervisor supports me pro-actively asking my patients or clients about whether they are experiencing domestic violence." Questions were scored as 1 for desirable ("yes") responses and 0 for undesirable ("no" or "I don't know") responses. The system support global domain score was the arithmetic sum of the six individual item

values. Higher global system support scores were indicative of a provider's perception of greater resources and support for health providers to respond to GBV within their facility.

Empathy. The study's fifth outcome domain, empathy, was measured using the Toronto Empathy Questionnaire (TEQ), a brief, unidimensional tool to measure empathy.[16] The tool was developed and validated in Canada, where studies demonstrated high internal consistency and validity among university students.[16] Subsequently, the TEQ has been administered to assess empathy in numerous, diverse populations, including, but not limited to, medical students in South Korea[17] and Romania[18], and the general population in the Czech Republic.[19] In these settings, the TEQ was translated into the appropriate language, and otherwise culturally adapted. Measurement validity was shown to be maintained across diverse populations with these adaptations.[16–19]

The original 16-item TEQ was translated into Tetum. Item responses were measured on a five-point Likert scale for a total possible score of 64. Examples of questions included, "I enjoy making others feel better", "I become irritated when someone cries", and "it upsets me to see someone being treated disrespectfully." Responses were scored on a scale where positively worded items (where "always" was the more empathetic response) were scored as follows: never = 0; rarely = 1; sometimes = 2; often = 3; always = 4. Conversely, scores for the negatively worded items (where "never" was the more empathetic response) were reversed (never = 4; rarely = 3; sometimes = 2; often = 1; always = 0). Higher scores were indicative of greater self-reported empathetic behavior.

Study Descriptive Variables and Covariates

Demographic and other background data. Participants reported demographic information at baseline including sex (male; female), age (<34; 35-44; 45+), and occupational role (community health worker, medical doctor, midwife, nurse, other). Additionally, participants were asked at baseline to report on how long they had been in their current occupational role and if they had participated in previous training on GBV.

Learning Lab Attendance. Participant attendance at learning lab sessions was identified from programmatic records and linked to each individual via their participant IDs. Attendance was coded for the number of sessions attended (range: zero to eight).

Table 1. Survey Domains

Domain	No. of Questions	Definition
Knowledge	42	This domain measures general knowledge about GBV, warning signs to look for in clients, appropriate ways for a healthcare provider to ask about GBV, and helpful ways for a healthcare provider to respond to a client experiencing GBV.
Attitudes	29	This domain measures general attitudes toward GBV, the acceptability of GBV, gender roles, and the healthcare provider's responsibility to respond to GBV.
Confidence	10	This domain measures how prepared healthcare providers feel to identify and provide survivor-centered care to victims of GBV.
System Support	6	This domain measures the resources and support healthcare providers require to respond to GBV, including if their health facility has leadership supportive of addressing GBV with clients, if appropriate spaces are available to discuss experiences of GBV with clients, and if information on additional resources for the client is available.
Empathy	16	This domain measures attributes of healthcare providers that are associated with empathy. This domain does not specifically address GBV, but rather measures empathy as an essential component of a provider's response to GBV.

Data Analysis

We used descriptive statistics to summarize the characteristics of the study sample, including demographic variables such as age group, sex, and occupation. We compared the categorical characteristics of those who remained in the study to those lost to follow-up using chi-square tests. Baseline domain scores of the retained participants and those lost to follow-up were compared using Wilcoxon rank sum tests.

In line with best practices for limiting bias, multiple imputation by chained equations[20] was utilized to impute missing domain item values across all three timepoints. Twenty imputations were conducted, and subsequent regression analyses conducted using Stata's *mi* routines.[21]

Wilcoxon rank sum tests were used to assess significance of the bivariate comparisons of baseline and post-intensive scores; and post-intensive and endline scores for each of the five outcomes.

Multiple linear regression was performed to assess the relationship of post-intensive score on endline score after adjustment for study covariates. Two models were run for each of the five outcomes. The first, more parsimonious model was adjusted for baseline score only. The second model was adjusted for baseline score, age group, sex, occupation, and attendance at monthly learning labs. Robust (Huber-White sandwich) variance estimation was specified to accommodate for potential model and distributional misspecification.

The following equation describes the second, more fully adjusted model for each outcome, and was specified *a priori*:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10}$$

Where:

Y_i = endline domain score

β_0 = Y intercept

X_1 = post-intensive domain score

X_2 = baseline domain score

X_3 = age group: 35-44 years

X_4 = age group: 45+ years

X_5 = female sex

X_6 = profession: medical doctor

X_7 = profession: midwife

X_8 = profession: nurse

X_9 = profession: other

X_{10} = number of monthly learning labs attended

And β_1- β_{10} served as the coefficients for X_1-X_{10}, respectively.

All statistical analyses were conducted using R version 2023.12.0+369 and Stata version 16.1. Statistical significance was set at $p < 0.05$.

The significance of the attendance variable (X_{10}), served as a test of the dose-response contribution of learning lab attendance on endline score after adjustment for both baseline and post-attendance scores, thereby satisfying Aim 2 of this study.

Ethical Approval

Written consent was obtained from all participants in the study. The INS Human Research Ethics Committee in Timor-Leste approved this project (ID: 417). The University of Washington Institutional Review Board granted this evaluation a non-research determination (ID: STUDY00018231).

Author Positionality

Before presenting the results of my analysis, it is important to acknowledge my positionality within this research. I am a white, American, cis-gendered woman pursuing graduate studies in global health. While I have visited Timor-Leste for business, I have not spent substantial time there nor do I speak Tetum. I have experience in conducting healthcare provider training evaluations, but limited experience in gender-based violence research specifically. I have never been the victim of gender-based violence and believe firmly in its unacceptability. I have benefited from the mentorship of the HAMNASA team, who have expertise in the cultural context of Timor-Leste and the specifics of this intervention, and my thesis committee, who have expertise in intervention design, research methods, and gender-based violence. Additionally, I have benefitted from the mentorship of Jessica Dyer, who has generously mentored me in the necessary statistical coding skills to complete this analysis.

RESULTS

Study Sample Characteristics

Of the 459 questionnaires collected across the three timepoints, 43 involved a negative response to the questions on consenting to the use of the participant's data in research and were removed

from the study sample. Of the remaining 416 questionnaires, 182 were unable to be matched across the three timepoints due to either lack of participation at all three timepoints or inconsistency in documentation of the participant ID. Matched data was obtained for 78 participants, representing a total of 234 surveys across the three timepoints. Demographic characteristics of participants at baseline are presented in Table 2. Briefly, the overall sample was 67% female, and 63% of the sample was 34 years old or younger. The most prevalent occupational role was midwife (31%), followed by medical doctors (28%), and nurses (26%). The median years of experience participants reported in their clinical roles was six years. Only 6% of participants (n = 5) had received prior GBV training. Out of the eight learning lab sessions, participants attended a median of four sessions.

Table 2. Participant Characteristics (n = 78)

Characteristic	**Overall** n = 78 (%)	**Ermera** n = 44 (%)	**Liquica** n = 34 (%)
Sex			
Female	52 (66.7)	31 (70.5)	21 (61.8)
Male	26 (33.3)	13 (29.5)	13 (38.2)
Age (years)			
34 or younger	49 (62.8)	30 (68.2)	19 (55.9)
35-44	20 (25.6)	7 (15.9)	13 (38.2)
45 and older	9 (11.5)	7 (15.9)	2 (5.9)
Occupational Role			
Community health worker	3 (3.8)	1 (2.3)	2 (5.9)
Medical doctor	22 (28.2)	11 (25.0)	11 (32.4)
Midwife	24 (30.8)	15 (34.1)	9 (26.5)
Nurse	20 (25.6)	14 (31.8)	6 (17.6)
Other	9 (11.5)	3 (6.8)	6 (17.6)
Previous GBV Training[1]	5 (6.4)	3 (6.8)	2 (5.9)
Years of practice[1]	5.5 (2.0, 8.0)	6.0 (2.0, 8.3)	4.5 (2.0, 7.0)
Attendance at Learning Labs[1]	4.0 (3.0, 5.0)	4.0 (3.0, 5.0)	4.0 (2.3, 6.8)

[1]Median (IQR)

Bivariate Results

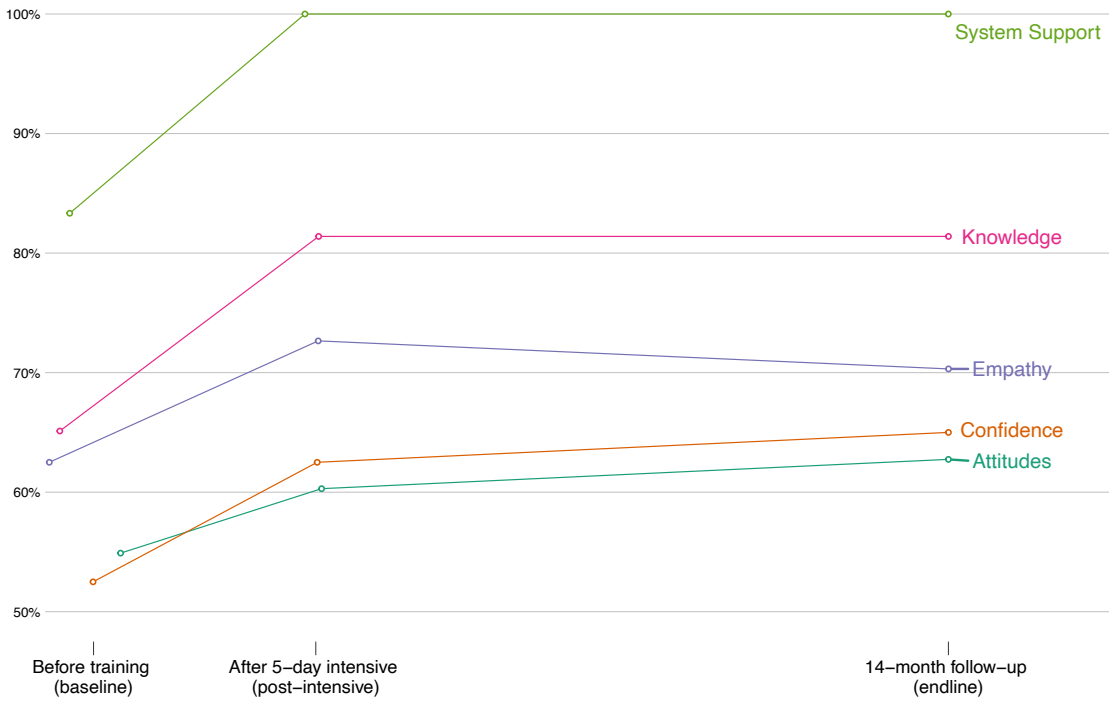
In unadjusted analyses, healthcare providers participating in the GBV training improved across the GBV knowledge, attitudes, confidence, empathy, and system support domains. Statistically significant differences in median scores were observed across all five domains from baseline to post-intensive ($p < 0.001$, Table 3). However, while all domains were significantly different from baseline to post-intensive, scores plateaued from post-intensive to endline (Figure 1). No significant differences were observed between the 5-day post-intensive survey and endline survey (Table 3).

Table 3. Median participant scores at baseline, post-intensive, and endline, by domain and Wilcoxon rank sum test results

Domain (total points)	**Baseline**[1]	**Post-intensive**[1]	**Endline**[1]	**Baseline to post-intensive**	**Post-intensive to endline**
				p	**p**
Knowledge (43)	28.0 (24.3, 31.8)	35.0 (32.0, 38.0)	35.0 (31.3, 37.0)	**<.01**	.70
Attitude (102)	56.0 (49.3, 61.8)	61.5 (56.0, 68.8)	64.0 (58.0, 71.8)	**<.01**	.20
Confidence (40)	21.0 (16.0, 24.8)	25.0 (20.3, 28.0)	26.0 (21.3, 28.8)	**<.01**	.20
System Support (6)	5.0 (3.0, 6.0)	6.0 (5.0, 6.0)	6.0 (5.3, 6.0)	**<.01**	.08
Empathy (64)	40.0 (36.0, 45.0)	46.5 (38.0, 52.0)	45.0 (42.0, 48.8)	**<.01**	.50

[1]Median (IQR)

Figure 1. Median test scores at baseline, post-intensive, and endline, by domain



Multiple Linear Regression Results

Knowledge. A significant positive relationship was found between post-intensive GBV knowledge and endline scores after adjustment for baseline knowledge score (Table 4). Specifically, an average 0.35 increase in endline knowledge score was found for each one unit of post-intensive knowledge score (p=0.04). After adjustment for the baseline score, sex, age group, occupation, and attendance at learning labs, the average change in knowledge domain score from post-intensive to endline was still positive but only marginally significant (p=0.12). Attendance at the learning labs was also positively associated with endline knowledge score, though only marginally significant (p=0.15).

Attitudes. No significant or marginally significant association between post-intensive and endline attitude score was found for either the minimally or fully adjusted model.

Confidence. The relationship between post-intensive and endline confidence scores after adjustment for baseline confidence score was only marginally significant (p=0.06). Specifically, an average 0.28 increase in endline confidence score was found for each one unit of post-intensive confidence score. Following full adjustment for baseline domain score, sex, age group, profession, and attendance at learning labs resulted in further toward marginal significance (p=0.14). Learning lab attendance was not significantly associated with endline confidence score.

System Support. No significant or marginally significant association between post-intensive and endline attitude score was found for either the minimally or fully adjusted model.

Empathy. A significant positive relationship was found between post-intensive and endline empathy scores after adjustment for baseline empathy score (p =0.05). Specifically, an average 0.22 increase in endline empathy score was found for each one unit of post-intensive empathy score. After adjustment for the baseline score, sex, age group, occupation, and attendance at learning labs, the average change in empathy domain score from post-intensive to endline was still positive but only marginally significant (p=0.10). There was not a significant association between learning lab attendance and endline score.

Table 4. Minimally and Fully Adjusted Linear Regression Model Results of Endline Scores on Each Domain

	Adjusted for baseline score only[1]		**Fully adjusted model[2]**	
	β	**SE**	**β**	**SE**
Knowledge				
Post-intensive domain score	**.35**	.17	.26[3]	.16
Baseline domain score	.22	.16	.35[3]	.18
Attendance at learning labs	–	–	.37[3]	.26
Attitudes				
Post-intensive domain score	.13	.16	.09	.18
Baseline domain score	.14	.14	.04	.16
Attendance at learning labs	–	–	.27	.51
Confidence				
Post-intensive domain score	.28[3]	.15	.21[3]	.14
Baseline domain score	**.25**	.11	**.26**	.12
Attendance at learning labs	–	–	.21	.30
System Support				
Post-intensive domain score	-.08	.07	-.06	.07
Baseline domain score	**.10**	.04	**.11**	.05
Attendance at learning labs	–	–	.07[3]	.53
Empathy				
Post-intensive domain score	**.22**	.11	.20[3]	.12
Baseline domain score	.14[3]	.09	.15	.09
Attendance at learning labs	–	–	.01	.36

[1] Adjusted for baseline domain score only

[2] Adjusted for baseline domain score, sex, age group, occupation, and attendance at learning labs.

[3] $p < .15$

Bold text indicates significant estimates ($p < .05$).

DISCUSSION

This is the first study to report on the effect of an extended training program on healthcare providers' ability to identify clients experiencing GBV and deliver informed and empathetic care in Timor-Leste. After adjustment for baseline score, there was a significant positive relationship between participants' post-intensive score and endline score in two of the five outcomes: knowledge and empathy. After fully adjusting for baseline score, sex, age group, occupation, and attendance at monthly learning labs, there was a marginally significant relationship between post-intensive score and endline score in three of the five outcomes: knowledge, empathy, and confidence. Few studies have evaluated the specific effect of refresher trainings (known as 'learning labs' in this study) on GBV training outcomes for healthcare providers. No significant associations between greater attendance at learning labs and endline score was found in any domain, indicating a potential lack of a dose-response relationship, though it should be noted this study was underpowered, therefore requiring further research to confirm a dose-response relationship of learning labs.

Studies focusing on the refresher training period as they relate to continued changes in the five GBV study domains are limited. A study of a similar GBV training program for healthcare providers in India found statistically significant improvements in participant knowledge from pre- to post-intensive training were sustained in a 6-month follow-up period that included refresher trainings.[22] In contrast, our study showed suggestion of continued improvement of provider knowledge in the learning lab period. While not GBV-specific, a 2016 systematic review on newborn resuscitation programs in limited-resource settings found that 80% of training programs that were able to sustain providers knowledge and skills over time included regular refresher training and half of those studies continued to improve provider

knowledge and skill in the refresher training period.[23] This aligns with our findings and suggests the learning labs may be effective in continuing to improve provider's general knowledge and appreciation of warning signs of GBV, and appropriate and helpful ways for a healthcare provider to ask about and respond to a client experiencing GBV.

This study importantly showed that the baseline to post-intensive improvements in healthcare provider attitudes toward GBV were sustained at endline, in contrast to other studies. A similar GBV training for healthcare providers in India found that initial changes in provider attitudes following a 2-day intensive training were not sustained at 6-months post-intensive training, despite refresher trainings.[22] This aligns with a 2021 Cochrane Review that shows no clear evidence to support that trainings shift provider attitudes.[11] A systematic review of similar interventions for healthcare providers that found only one out of 11 studies were able to shift victim-blaming attitudes of healthcare providers.[24] The 'Responding to GBV' training's ability to initially improve and then sustain changes in attitudes during the learning lab period is notable given a tendency toward victim-blaming in cases of GBV in Timor-Leste, even when the victim is a member of one's own family.[25]

The sustained, and if not marginal improvements, in provider confidence to identify and provide survivor-centered care to victims of GBV at 14-month endline is promising. Previous studies have not assessed healthcare provider confidence in providing GBV-related care in the refresher training period specifically. However, a training of midwives in Sri Lanka showed significant improvement in participant self-confidence about caring for victims of intimate partner violence (IPV) 6-months post-training without refresher trainings.[26] It is possible that our study's marginal improvements in endline confidence scores from post-intensive are a result of

the refresher training period, though additional research with an appropriately powered study is necessary to confirm this finding.

The exploration of healthcare provider empathy within the context of GBV is an emerging research domain and has limited published research. A 2023 qualitative study in India suggested that GBV training improved providers' self-reported empathy toward victims of GBV at 6-months post-training.[27] Quantitative work on healthcare provider empathy as it relates to GBV training has yet to be published, likely because it is a complex domain to capture in an already under-researched area. However, the improvements observed in the empathy domain at endline in our study align with the findings of the qualitative work completed in India. A 2022 mixed-methods study conducted in Timor-Leste found that Timorese women who are victims of GBV and seeking medical care desire empathetic healthcare providers,[25] highlighting the importance of fostering healthcare provider empathy toward victims of GBV in Timor-Leste.

Sustained changes in provider perceptions of system support is promising, though a rarely studied area of healthcare provider GBV trainings. Only one similar study was found that assessed healthcare provider perceptions of system support. In the Indian context, the use of a similar GBV training model was unable to sustain the initial improvements in system support scores following a 2-day intensive training at 6-month endline, despite refresher trainings.[22] It is promising that the changes witnessed from baseline to post-intensive in our study were sustained at 14-month endline. This is particularly notable given that the system support domain included some questions that are not within the trained providers' control (e.g. having a private space at their facility to talk to women about abuse). The domain was still included in the analysis as it did include some questions that the training could be expected to influence (e.g. having the names and contact information for people to refer victims of GBV to). While no significant

improvements were seen from post-intensive to endline, the median participant scores at post-intensive was 6, which is the maximum points possible, therefore a ceiling effect may have prohibited significant effects from post-intensive to endline.

While post-intensive to endline improvement in domain scores could not be firmly established, the sustainment of provider improvements from the initial 5-day intensive training to endline is an important step toward equipping healthcare providers with the knowledge, attitudes, confidence, empathy, and system support they need to meet the needs of Timorese women seeking care for GBV. Particularly given that attendance at learning labs was optional, sustainment of, and potential further improvement to providers' scores from post-intensive to the 14-month endline is promising.

Implications for future implementation and research

One of the most critical findings to inform future implementation and research efforts is the uncertainty around the additional contribution of the 14-months of learning labs to continued improvement of the knowledge, attitudes, confidence, system support, and empathy domains. However, despite the underpowered study, knowledge, confidence and empathy scores all had marginally significant and positive relationships between post-intensive and endline scores even after robust adjustment, suggesting a pattern consistent with improvement following the 14-month learning labs.

Limitations

It is important to acknowledge several limitations in this work. First, there is no evidence to support the TEQ's use in Timor-Leste or translation into Tetum. Future validation of the

questionnaire in the Timor-Leste context would be beneficial for measurement of empathy in this population.

The study's lack of a comparison group is the primary limitation of this study, preventing the ability to distinguish the effects of participation in the 'Responding to GBV' curriculum on changes in the knowledge, attitudes, confidence, empathy, and system support outcomes versus those attributable to time. While the baseline score is used as the comparator in this study, we cannot assume that the intervention was the only change across time. There may be other factors outside of the program that could be influencing changes in score, such as changing social norms around GBV. Without a comparison group, it is not possible to ascertain whether external factors or the training contributed to the changes in GBV-related knowledge, attitudes, confidence, system support, and empathy domains. However, given the absence of other GBV-focused interventions in Timor-Leste, it is unlikely another educational intervention would have caused the observed improvement.

The study was also constrained by a small sample size. The process of matching participants across the three timepoints presented challenges, primarily due to inconsistency in documentation of participant unique identifiers. The small sample size may result in underpowered analyses, limiting our ability to detect significant effects. Future efforts should prioritize more robust tracking and documentation measures and ensure sufficient statistical power to reliably assess the utility of learning labs.

Despite these limitations, the study offers preliminary data on the potential impact of the 'Responding to GBV' curriculum on health providers' knowledge, attitudes, confidence, empathy, and system support related to GBV in Timor-Leste. The first study of this kind in the

Timorese context, it offers important information and lessons learned as the program moves to expand the training program with additional funding from USAID.

CONCLUSION

In summary, participant knowledge, attitude, empathy, confidence, and system support domain scores improved following participation in the 'Responding to GBV' training curriculum, adapted to the Timor-Leste context from the WHO curriculum, 'Caring for women subjected to violence'. The 14-month learning lab period largely showed sustainment of participant learning across all five domains following the 5-day intensive training, though there is evidence to suggest that participant knowledge, confidence, and empathy may have continued to improve following the learning lab training. These results are promising given the profoundly high rates of GBV in Timor-Leste and the government's commitment to reducing GBV in the country via a health system response. Future study involving a comparison group would contribute to more robust estimates of the improvements attributable to the 5-day intensive and learning lab training sessions.

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