

Original article

# Assessing the link between endorsing attitudes justifying partner abuse and reproductive health care utilization among women in Lao PDR

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## Abstract

**Objective:** Evidence from developing countries on the association between women's endorsement of attitudes justifying partner abuse and their use of reproductive health services is suggestive but inconclusive. This study uses a nationally representative dataset from Lao PDR to provide strong evidence for the relationship between women's endorsement of attitudes justifying partner abuse and use of reproductive health services.

**Methods:** This study used data from the 2011–2012 Lao Social Indicator survey (LSIS). The analyses were performed on the responses of 4227 women. The exposure of interest in this study was endorsement of attitudes justifying partner abuse. Antenatal care (ANC) visits divided according to amount and quality, delivery care by type and place, and utilization of postnatal care (PNC) for mothers and newborn infants were used as representative outcome variables of reproductive health service utilization.

**Results:** Approximately seven out of ten respondents (67.9%) believed that partner abuse was justified. Women who endorsed these attitudes were significantly less likely to receive any ANC, to seek institutional delivery, and to use trained medical personnel for delivery assistance. Endorsing attitudes were associated with reduced probability of receiving PNC services for mothers and newborn infants, reduced frequency of ANC visits, and receiving a fewer number of ANC components. Other sociodemographic factors likely to affect the increased utilization of several of the indicators of reproductive health care were living in the central region, belonging to

the high bands of wealth, having higher level of education, being a young adult (20–34 years) or older (35–49 years), residing in urban areas, and being sexually empowered.

**Conclusions:** In addition to a broad range of sociodemographic factors, our findings suggested that women's endorsement of attitudes justifying partner abuse should be treated as an important psychosocial determinant of reproductive health care service utilization in Lao PDR.

**Key words:** antenatal care, delivery care, postnatal care, women's attitudes towards partner abuse, Lao PDR

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## Introduction

Although Lao PDR has achieved the first target of Millennium Development Goal 5 (MDG 5) by reducing its maternal mortality ratio (MMR) by 75%, the MMR is still high at 220 per 100000 live births according to 2013 data<sup>1</sup>, especially as compared to the global value as well as that in the East Asia and Pacific region. Moreover, the second target of MDG 5, regarding universal access to reproductive health care, has not been reached<sup>1</sup>. A number of interventions, including use of antenatal care (ANC), institutional delivery, delivery by trained medical personnel, and use of postnatal care (PNC) for mothers and their newborn infants have been shown to reduce the MMR<sup>2</sup>. However, the usage rates of all of these primary reproductive health services are low in Lao PDR, with only an estimated 40% of pregnant women having at least one ANC visit, only 14% births happening at a health care facility, and rare PNC visits (2%)<sup>3</sup>.

The major determinants of the low rates of reproductive health service utilization among women in Lao PDR as well as that in other low socioeconomic settings were assumed to be related to lower level of education<sup>3–6</sup>, lack of knowledge<sup>7</sup>, being of young age<sup>8</sup>, high birth order<sup>8</sup>, un-

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employment<sup>9</sup>), low service accessibility<sup>10</sup>), hidden costs of treatment<sup>10</sup>), remoteness<sup>11</sup>), and poor socioeconomic status<sup>12</sup>). However, studies performed to date have typically not taken into consideration the roles of psychosocial factors in women's utilization of reproductive health services. Attitudes justifying partner abuse are considered as a psychosocial risk factor that may affect the use of reproductive health services. There have been no studies regarding psychosocial risk factors and their associations with reproductive health care utilization in Southeast Asia. As an indication of the patriarchal culture of Lao PDR, 58% of women endorse attitudes justifying partner abuse, and nearly one third of the women are victims of some type of physical, emotional, or sexual intimate partner violence (IPV)<sup>13</sup>). A limited number of studies<sup>14–18</sup>) from diverse international settings outside Southeast Asia have examined the link between women's endorsement of attitudes justifying partner abuse and their use of reproductive health services. However, the findings of these studies remain inconclusive. For example, a study conducted in India<sup>14</sup>) indicated that women's acceptance of partner abuse was associated with a lower risk of utilization of any form of ANC. However, there was no significant association between women's attitudes and the incidence of institutional delivery. A study conducted in Ethiopia<sup>15</sup>) indicated an association between women's endorsement of attitudes justifying partner abuse and lower likelihoods of utilizing any form of ANC and having an institutional delivery, but there was no significant association with PNC.

A population-based study conducted in Nigeria<sup>16</sup>) showed that women's endorsement of attitudes justifying partner abuse was associated with receiving delivery care from skilled health personnel, but there was no significant association between such attitudes and ANC. Another study conducted in Tanzania<sup>17</sup>) concluded that attitudes toward wife beating were not associated with any of the health services utilization outcomes. In addition, a multi-country study<sup>18</sup>) showed that women's agreement toward partner beating was associated with the utilization of delivery care from skilled health personnel and ANC visits in Ghana, and with number of ANC visits in Tanzania. However, no significant association was observed in Kenya and Uganda. The present study was performed to examine this important topic by analyzing the associations between women's endorsement of attitudes justifying partner abuse and the use of reproductive health services in a nationally representative sample of Lao PDR.

## Materials and Methods

### Data sources

The present study used data from the 2011–2012 Lao So-

cial Indicator Survey (LSIS), a countrywide representative household-based survey covering both rural and urban areas<sup>19</sup>), conducted between October 2011 and March 2012. A two stage, stratified cluster sampling approach was applied to select the survey sample. In the first stage, the required number of primary sampling units (PSUs) was selected systematically using a square root allocation method. The PSUs were ratified from the 2005 Lao census frame and were designated as enumeration areas (EAs)<sup>19</sup>). In the second stage, a fixed sample size of 20 households was tabbed from each PSU using systematic, equal-probability sampling. Therefore, a total of 19960 households were selected. Of these, 18843 were successfully interviewed, providing a household response rate of 94.4%.

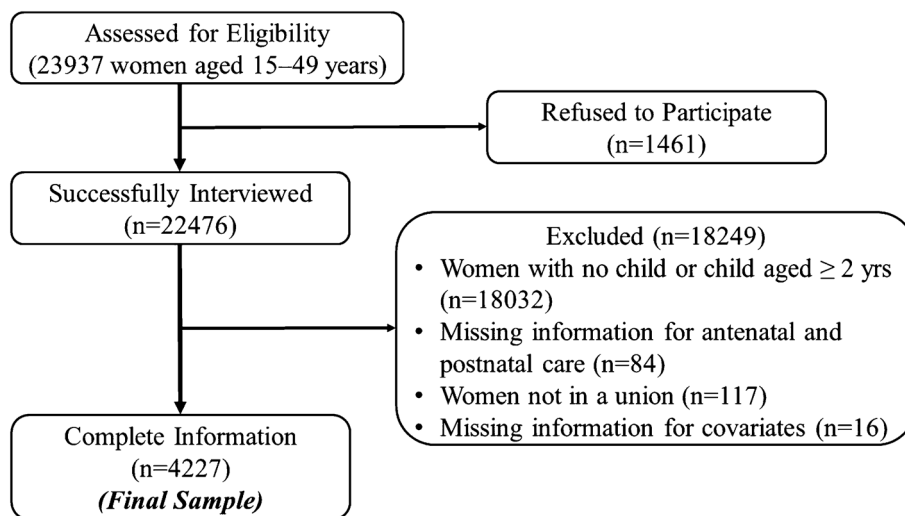
The 2011–2012 LSIS used the following four sets of questionnaires: 1) household questionnaire; 2) women's questionnaire; 3) men's questionnaire; and 4) under-5 questionnaire. A total of 22476 of the 23937 women aged 15–49 years who were assumed to be eligible for the women's questionnaire on maternal and child health outcomes participated in the study (93.9% response rate). Only those women who had given birth (live or still birth) in the 2 years preceding the survey ( $n = 4444$ , 19.8% of all women interviewed) were asked ANC-related questions; this was the base sample for the present analysis. However, the analytical sample comprised 4227 women (95.1% of the base sample) because of missing observations on key study variables or because the women were not in a domestic union (for details see Figure 1).

### Measures

**Outcomes:** We used the following seven outcome variables as indicators of reproductive health care utilization in the present analysis: 1) any ANC visits; 2) frequency of ANC received; 3) quality of ANC; 4) place of delivery; 5) delivery assistance according to provider type; 6) utilization of PNC among mothers at any time after birth; and 7) utilization of PNC among newborn infants at any time after birth. To gauge the use of ANC services, a binary variable was generated to represent whether the women did or did not obtain ANC. We also measured the number of ANC visits.

In this analysis, quality of ANC was defined as receipt of the relevant ANC components during pregnancy, as used in previous studies<sup>20, 21</sup>). We constructed an additive index of responses to the following five questions on ANC components: blood pressure checked, urine sample taken, blood sample taken, received iron supplements, and received tetanus vaccination. Each question had a binary response (1 = Yes; 2 = No). Tertiles were used to label the sum of the five binary variables as the low, medium or high ANC quality score.

To judge delivery support by type of provider, a binary



**Figure 1** Flow chart on the process of selecting the study sample. From the total 23937 women aged 15–49 years, 4227 women with children aged below two years were selected, 2011–2012 Lao PDR.

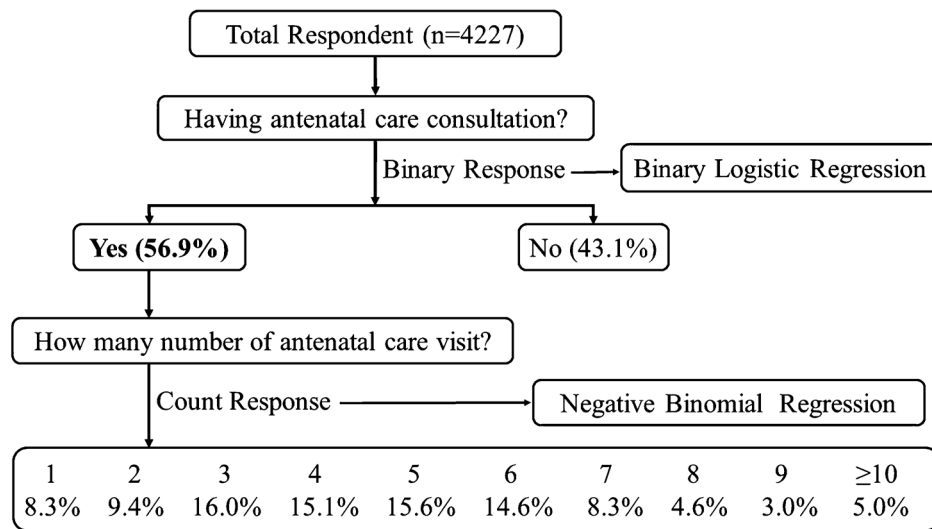
variable was generated from responses to a question regarding whether the respondent had accessed any “advice or treatment” from a health professional (e.g., doctor, nurse, midwife, or auxiliary midwife) or from a non-medical health provider (e.g., traditional birth attendant, community health worker, relative, other). A binary variable was also constructed to gauge respondents’ place of delivery as institutional (government/ private health center) versus non-institutional (respondent’s or other’s home).

**Exposure:** The exposure of interest in this study was endorsement of attitudes justifying partner abuse. Women’s attitudes toward justifying partner beating were computed based on their answers to five questions regarding the conditions under which it was acceptable for a man to beat or rape his partner: 1) if she goes out without notifying her husband; 2) if she argues with her husband; 3) if she neglects the children; 4) if she refuses to have sex with her husband; and 5) if she burns food. For each of these questions, response options were yes (1) or no (2). We created a binary measure that dichotomized those who did not feel that a man would be justified in beating or raping his partner under any circumstances (2) from those who endorsed the beating or raping of his partner under one or more of the listed conditions (1).

**Control variables:** We incorporated sociodemographic variables theoretically and analytically related to the utilization of reproductive health services<sup>4–12</sup> and acceptance of partner abuse<sup>22–24</sup>. We codified the participants based on their current age, into the following three broad groups according to their fertility and reproductive behavior: ado-

lescence (1 = 15–19 years), young adult (2 = 20–34 years), and older (3 = 35–49 years). Husband’s age was categorized as young adult (1 = 15–24 years), adult (2 = 25–39 years), middle-aged (3 = 40–59 years), and older (4 = 60–79 years). Women’s educational level was designated as follows, according to the formal education system of Lao PDR: no education (1 = 0 year), primary (2 = 1–5 years), lower secondary (3 = 6–9 years), upper secondary (4 = 10 years), postsecondary (5 = 11–12 years), or higher (6 = 13 years or more). Place of residence was labeled as urban (1) versus rural (2). Intention regarding pregnancy for the last birth was categorized as intended (live birth wanted at the time of conception) versus unintended (live birth wanted after conception or not wanted at all). Region was categorized as central (1), north (2), or south (3).

A household wealth index was constructed based on interviewer-observed assets. Household wealth scores were allocated using principal components analyses and they were divided into quintiles from 1 (poorest) to 5 (wealthiest). A sexual empowerment variable was also created based on the women’s answers to the following four questions with “yes” or “no” response options: 1) are you justified in asking to use a condom if your husband has a disease?; 2) are you justified in refusing sex if your husband has other partners?; 3) can you say “no” if you do not want to have sexual intercourse?; and 4) can you ask your husband to use a condom? Women were considered to be sexually empowered if they answered “yes” to each of the questions. We created a bivariate measure to separate those who were sexually empowered (1) from those who were not sexually empowered



**Figure 2** Two-stage model of decision making regarding antenatal care utilization, 2011–2012 Lao PDR.

under any conditions (2).

#### Statistical analysis

We used design-based descriptive and bivariate analyses (unweighted frequencies, and weighted estimation of means and proportions) to describe sociodemographic characteristics, endorsement of attitudes justifying partner abuse, and characteristics of health service utilization among individuals in the study sample. Survey commands (SVY) in STATA Version 14 (Stata Corp, College Station, TX) were used considering that the LSIS 2011–12 prescribed women’s individual sampling weights. These commands used the Taylor series linearization method to estimate confidence intervals around prevalence estimates. The women’s individual sampling weight in this survey was the inverse of their individual response rate multiplied by the household sampling weight. After adjusting for nonresponse, sampling weights were normalized to obtain the total number of unweighted cases, equal to the total number of weighted cases at the national level for the total number of women. Detailed descriptions of the methods for sampling weight calculation can be accessed online in the LSIS 2011–12 survey report<sup>(9)</sup>. The chi-square test was used to examine sociodemographic differences in the endorsement of attitudes justifying partner abuse. In all analyses,  $P < 0.05$  (2-tailed) was considered to indicate statistical significance. Pearson’s point bi-serial correlation coefficients among the independent variables were examined to determine possible collinearity. Husband’s age was not included in any adjusted analyses due to the strong correlation with the age of the respondent ( $r = 0.74$ ).

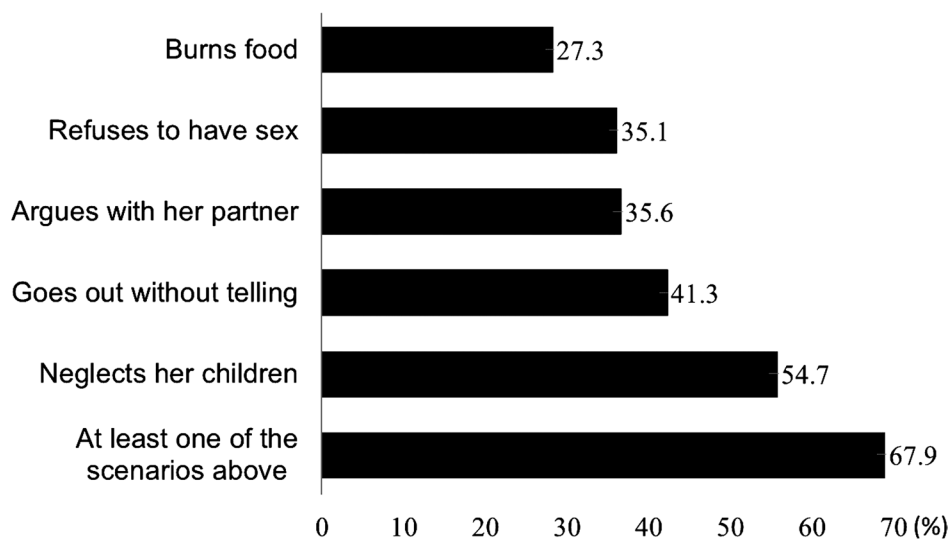
We adopted a two-stage model to examine the determi-

nants of ANC service utilization. In the first stage, we estimated the probability of women having any ANC visit, while the second stage predicted the frequency of ANC visits. As the dependent variable in the first stage was binary, we fitted a binary logistic regression model. In the second stage, we used a negative binomial regression because our dependent variable was a count variable indicating the number of times a woman received ANC (Figure 2). We estimated adjusted odds ratios (AORs) in the binary logistic regression model and incidence rate ratio (IRRs) in the negative binomial regression model. The interpretation of IRRs and AORs are different because IRR is the ratio between two incidence rates (the number of times a woman received ANC, which, by definition is a rate and a count variable), whereas AOR is the ratio between two odds (where the response is binary).

We used four logistic regression adjusted models to analyze our binary outcome variables (institutional delivery, delivery care by provider type, and PNC for mothers and their newborn infants) with each model including our exposure variable of endorsement of attitudes justifying partner abuse. Because the outcome measure ANC quality score was ordinal (low, medium, or high ANC quality score), we used adjusted the ordered logistic regression to analyze the association between endorsement of attitudes justifying partner abuse and quality of ANC score. The Brant’s test confirmed that the proportional odds assumption was not violated. All covariates were entered simultaneously into the multiple regression models.

#### Ethical considerations

The survey was approved by the Ethics Committee of



**Figure 3** Percentage of women who believed that wife beating is justified if the husband is angered by “the things the wife does,” 2011–12 Lao PDR.

Office of Research Compliance (ORC) Macro at Calverton in the USA and by the National Ethics Committee of Lao PDR. All study participants provided verbal informed consent before taking part in the survey, and all information was collected confidentially. Survey participants and interviewers were gender-matched to increase disclosure. All data used in this study have been completely de-identified and are available for public use (download at <http://mics.unicef.org/surveys>).

## Results

A substantial percentage of women (67.9%) believed that it was justified for partners to beat their wives (Figure 3), with the highest proportion agreeing that it was justifiable for neglecting children (54.7%).

Table 1 shows the weighted and unweighted distributions of the key variables. The present sample included 4227 mothers, more than one third of whom did not receive any ANC (43.1%). The average number of ANC visits of the women included in the study was 4.80, with only 39.3% receiving high quality ANC. The proportions of utilization of institutional delivery and assisted delivery from trained medical personnel were 40.5% and 40.5%, respectively. The majority of mothers (92.3%) and newborn infants (86.5%) did not have a PNC visit at any time after delivery.

Table 1 also shows the bivariate statistics for the key study variables. Approximately 70% of the women living in rural areas believed that wife beating is justifiable as compared with 61% of those living in urban areas. Women from

wealthier households, those with postsecondary education or higher, and those living in the northern region were less likely to exhibit an accepting attitude toward wife beating. Significantly, women with one child and those who were sexually empowered were less likely to exhibit an accepting attitude toward wife beating.

Consistent with our expectations, the prevalence of attitudes justifying partner abuse was lower among women who had received ANC, those who had received a higher number of ANC components, those who had undergone institutional delivery, and those who had delivery assisted by trained medical personnel. Similarly, the prevalence of attitudes justifying spousal abuse was lower among women who had received PNC themselves and for their newborn infants as compared to their counterparts.

### *Association between endorsing attitudes justifying partner abuse and utilization of reproductive health services*

Table 2 shows the AORs and IRRs for various proxy measures of reproductive health service utilization according to the endorsement of attitudes justifying partner abuse. Women who endorsed attitudes justifying partner abuse were significantly less likely to receive any ANC (AOR = 0.65, 95% CI = 0.55–0.76), institutional delivery (AOR = 0.80, 95% CI = 0.68–0.94), and delivery assistance by trained medical personnel (AOR = 0.84, 95% CI = 0.70–0.99). In the adjusted models, endorsement of attitudes justifying partner abuse was associated with 32% and 30% reduction in the probabilities of receiving PNC services for mothers (AOR = 0.68, 95% CI = 0.53–0.87) and their newborn in-



**Table 1** Overall distribution and percentage of women who believed that partner abuse is justified: 2011–2012 Lao PDR (N=4227)

Characteristics		n (%) <sup>1</sup>	Endorsement of attitudes justifying partner violence % (95% CI)
Age, years	15–19	550 (12.2)	67.9 (63.5–72.0)
	20–34	3099 (73.8)	67.8 (65.9–69.7)
	35–49	578 (14.0)	68.2 (63.6–72.5)
	<i>P</i> -value		0.988
Husband's age, years	15–24	972 (22.0)	67.9 (64.5–71.1)
	25–39	2773 (66.1)	67.6(65.6–69.6)
	40–59	467 (11.6)	69.9 (64.7–74.6)
	60–79	15 (0.3)	55.9 (29.0–79.8)
	<i>P</i> -value		0.693
Education	No education	1298 (29.0)	74.9 (72.1–77.6)
	Primary	1760 (40.8)	66.3 (63.7–68.7)
	Lower secondary	657 (16.2)	70.1 (66.1–73.8)
	Upper secondary	268 (7.7)	63.1 (56.6–69.2)
	Postsecondary	136 (3.4)	45.1 (35.9–54.8)
	Higher	108 (2.8)	47.8 (37.5–58.2)
	<i>P</i> -value		<0.001
Marital status	Married	4136 (97.3)	68.0 (66.4–69.6)
	Cohabiting	91 (2.7)	64.2 (51.9–74.9)
	<i>P</i> -value		0.516
Area of residence	Rural	3386 (78.0)	69.9 (68.1–71.6)
	Urban	841 (22.0)	61.0 (57.1–64.7)
	<i>P</i> -value		<0.001
Region of residence	Central	1460 (46.5)	70.5 (67.87–2.9)
	North	1649 (32.2)	62.3 (59.8–64.7)
	South	1118 (21.3)	70.9 (67.3–74.2)
	<i>P</i> -value		<0.001
Wealth Index	Poorest	1300 (27.3)	73.0 (70.0–75.7)
	Second	970 (21.8)	68.1 (64.6–71.4)
	Third	801 (18.7)	66.0 (62.3–69.5)
	Fourth	633 (16.4)	66.5 (62.4–70.4)
	Richest	523 (15.8)	62.7 (58.0–67.1)
	<i>P</i> -value		0.001
Parity	1	1208 (29.7)	65.5 (62.5–68.5)
	2–3	1753 (41.4)	66.6 (64.0–69.0)
	4+	1266 (28.9)	72.3 (69.3–75.1)
	<i>P</i> -value		0.003
Pregnancy intended	No	442 (10.8)	65.9 (60.8–70.7)
	Yes	3785 (89.2)	68.2 (66.4–69.8)
	<i>P</i> -value		0.400
Sexually empowered	No	1083 (23.3)	72.1 (68.7–73.2)
	Yes	3144 (76.7)	67.7 (65.3–70.2)
	<i>P</i> -value		0.006
ANC received	No	1946 (43.1)	74.2 (71.7–76.4)
	Yes	2281 (56.9)	63.2 (60.9–65.4)
	<i>P</i> -value		<0.001
Frequency of ANC visits <sup>2</sup> (Mean, 95% CI)		4.80 (4.68–4.92) <sup>4</sup>	4.69 (4.54–4.84) <sup>5</sup>
ANC quality score <sup>3</sup>	Low	751 (31.7)	68.4 (64.6–71.9)
	Medium	739 (29.0)	65.3 (61.5–69.0)
	High	791 (39.3)	57.4 (53.5–61.2)
	<i>P</i> -value		<0.001
Institutional delivery	No	2651 (59.5)	70.9 (68.8–72.8)
	Yes	1576 (40.5)	63.6 (60.9–66.2)
	<i>P</i> -value		<0.001
Assistance delivery by skilled personnel	No	2667 (59.5)	70.8 (68.8–72.8)
	Yes	1560 (40.5)	63.6 (60.9–66.2)
	<i>P</i> -value		<0.001
Postnatal care for newborn	No	3734 (86.5)	69.4 (67.7–71.1)
	Yes	493 (13.5)	58.4 (53.7–63.0)
	<i>P</i> -value		<0.001
Postnatal care for mothers	No	3955 (92.3)	68.8 (67.2–70.4)
	Yes	272 (7.7)	57.0 (50.5–63.3)
	<i>P</i> -value		<0.001

ANC=antenatal care; CI=confidence interval. <sup>1</sup> Numbers are unweighted and percentages are weighted. <sup>2,3</sup> Based on a sample size of 2281. <sup>4,5</sup> Mean number of ANC visits; the values in the parenthesis indicate the 95% CI of the mean.

**Table 2** Multivariate analysis of women's utilization of reproductive health care services with their endorsement of attitudes that justify partner abuse: 2011–2012 Lao PDR

Measure	Utilization of ANC			Delivery care		Post-natal care	
	ANC received (n = 4227)	Frequency of ANC visits <sup>1</sup> (n = 2281)	ANC quality score <sup>2</sup> (n = 2281)	Institutional delivery (n = 4227)	Assistance delivery by skilled personnel (n = 4227)	Newborn (n = 4227)	Mother (n = 4227)
	AOR (95% CI)	IRR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
Endorsing attitudes justifying partner abuse							
No	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Yes	0.65 (0.55–0.76) <sup>a</sup>	0.88 (0.84–0.93) <sup>a</sup>	0.71 (0.59–0.86) <sup>a</sup>	0.80 (0.68–0.94) <sup>b</sup>	0.84 (0.70–0.99) <sup>c</sup>	0.70 (0.58–0.86) <sup>a</sup>	0.68 (0.53–0.87) <sup>b</sup>
Age, years							
15–19	1.00	1.00	1.00	1.00	1.00	1.00	1.00
20–34	1.84 (1.44–2.35) <sup>a</sup>	1.18 (1.09–1.27) <sup>a</sup>	1.48 (1.10–2.00) <sup>b</sup>	1.09 (0.85–1.39)	1.17 (0.91–1.50)	1.15 (0.94–1.87)	1.28 (0.82–2.02)
35–49	1.50 (1.07–2.12) <sup>c</sup>	1.20 (1.05–1.37) <sup>b</sup>	1.32 (0.86–2.03)	1.21 (0.85–1.71)	1.61 (1.12–2.33) <sup>c</sup>	1.25 (0.79–1.98)	2.07 (1.14–3.73) <sup>b</sup>
Education							
No education	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Primary	2.24 (1.85–2.70) <sup>a</sup>	1.14 (1.03–1.25) <sup>b</sup>	1.62 (1.19–2.21) <sup>b</sup>	0.87 (0.71–1.08)	1.19 (0.95–1.49)	1.17 (0.86–1.60)	1.25 (0.81–1.92)
Lower secondary	2.46 (1.89–3.21) <sup>a</sup>	1.25 (1.12–1.38) <sup>a</sup>	1.70 (1.21–2.41) <sup>b</sup>	1.35 (1.03–1.76) <sup>c</sup>	1.85 (1.40–2.44) <sup>a</sup>	1.06 (0.73–1.55)	1.44 (0.88–2.38)
Upper secondary	4.63 (2.89–7.43) <sup>a</sup>	1.35 (1.20–1.51) <sup>a</sup>	2.49 (1.64–3.78) <sup>a</sup>	2.34 (1.59–3.45) <sup>a</sup>	3.35 (2.22–5.06) <sup>a</sup>	1.28 (0.83–1.98)	1.60 (0.90–2.83)
Postsecondary	7.51 (2.75–20.5) <sup>a</sup>	1.38 (1.19–1.58) <sup>a</sup>	1.75 (1.05–2.91) <sup>c</sup>	3.60 (1.99–6.51) <sup>a</sup>	4.86 (2.57–9.16) <sup>a</sup>	2.14 (1.30–3.55) <sup>b</sup>	2.17 (1.14–4.14) <sup>c</sup>
Higher	11.4 (2.91–44.7) <sup>b</sup>	1.45 (1.28–1.64) <sup>a</sup>	2.33 (1.32–4.12) <sup>b</sup>	2.74 (1.31–5.76) <sup>b</sup>	4.21 (1.83–9.64) <sup>b</sup>	2.92 (1.70–5.01) <sup>a</sup>	3.99 (2.06–7.72) <sup>a</sup>
Marital status							
Married	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Cohabiting	1.07 (0.66–1.73)	1.08 (0.90–1.28)	1.47 (0.69–3.14)	1.50 (0.95–2.38)	1.65 (1.01–2.72) <sup>c</sup>	1.22 (0.68–2.19)	2.08 (1.07–4.03) <sup>c</sup>
Residence							
Rural	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Urban	1.98 (1.54–2.54) <sup>a</sup>	1.10 (1.04–1.16) <sup>b</sup>	1.75 (1.38–2.22) <sup>a</sup>	2.37 (1.92–2.93) <sup>a</sup>	2.65 (2.12–3.31) <sup>a</sup>	1.43 (1.13–1.81) <sup>b</sup>	1.18 (0.87–1.59)
Region							
Central	1.00	1.00	1.00	1.00	1.00	1.00	1.00
North	0.91 (0.76–1.09)	0.98 (0.92–1.03)	1.21 (0.98–1.50)	0.64 (0.54–0.77) <sup>a</sup>	0.76 (0.62–0.92) <sup>b</sup>	0.73 (0.58–0.93) <sup>c</sup>	0.73 (0.54–0.99) <sup>c</sup>
South	0.86 (0.71–1.05)	0.80 (0.75–0.86) <sup>a</sup>	0.98 (0.77–1.25)	0.70 (0.57–0.86) <sup>b</sup>	0.74 (0.60–0.91) <sup>b</sup>	0.74 (0.57–0.96) <sup>c</sup>	1.04 (0.76–1.43)
Wealth index							
Poorest	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Second	1.70 (1.39–2.09) <sup>a</sup>	1.02 (0.92–1.03)	1.51 (1.11–2.07) <sup>b</sup>	1.35 (1.07–1.71) <sup>c</sup>	1.90 (1.46–2.46) <sup>a</sup>	1.35 (0.94–1.94)	1.43 (0.86–2.39)
Middle	2.81 (2.25–3.53) <sup>a</sup>	1.19 (1.08–1.32) <sup>b</sup>	1.42 (1.03–1.95) <sup>c</sup>	2.24 (1.76–2.87) <sup>a</sup>	3.53 (2.71–4.60) <sup>a</sup>	1.64 (1.14–2.37) <sup>b</sup>	2.25 (1.37–3.70) <sup>b</sup>
Fourth	3.99 (3.05–5.22) <sup>a</sup>	1.21 (1.09–1.33) <sup>a</sup>	1.77 (1.28–2.45) <sup>b</sup>	3.25 (2.48–4.26) <sup>a</sup>	4.90 (3.67–6.54) <sup>a</sup>	2.58 (1.77–3.76) <sup>a</sup>	2.59 (1.54–4.34) <sup>a</sup>
Richest	8.91 (5.80–13.7) <sup>a</sup>	1.37 (1.22–1.53) <sup>a</sup>	3.91 (2.59–5.90) <sup>a</sup>	9.79 (6.80–14.1) <sup>a</sup>	13.92 (9.41–20.6) <sup>a</sup>	2.04 (1.32–3.15) <sup>b</sup>	2.53 (1.41–4.53) <sup>b</sup>
Parity							
1	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2–3	0.71 (0.58–0.87) <sup>b</sup>	1.02 (0.96–1.08)	0.75 (0.61–0.93) <sup>b</sup>	0.45 (0.37–0.55) <sup>a</sup>	0.50 (0.41–0.61) <sup>a</sup>	0.97 (0.70–1.12)	1.35 (1.00–1.80)
4+	0.53 (0.42–0.68) <sup>a</sup>	0.94 (0.85–1.03)	0.88 (0.64–1.20)	0.38 (0.29–0.49) <sup>a</sup>	0.31 (0.23–0.40) <sup>a</sup>	0.72 (0.51–0.83) <sup>b</sup>	0.69 (0.43–1.11)
Pregnancy intended							
No	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Yes	1.05 (0.82–1.35)	1.07 (0.97–1.18)	0.91 (0.66–1.26)	1.07 (0.83–1.39)	1.04 (0.79–1.37)	0.94 (0.69–1.29)	1.26 (0.82–1.94)
Sexually empowered							
No	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Yes	2.11 (1.74–2.55) <sup>a</sup>	1.12 (1.01–1.24) <sup>c</sup>	1.07 (0.80–1.42)	1.25 (1.01–1.54) <sup>c</sup>	1.63 (1.29–2.05) <sup>a</sup>	2.04 (1.45–2.89) <sup>a</sup>	1.97 (1.24–3.16) <sup>b</sup>

ANC= antenatal care; AOR= Adjusted odds ratio, IRR= Incidence rates ratio, CI= Confidence interval. <sup>1,2</sup> based on those who only received ANC. <sup>a</sup>: p<0.001, <sup>b</sup>: p<0.01, and <sup>c</sup>: p<0.05.

fants (AOR = 0.70, 95% CI = 0.58–0.86), respectively.

The negative binomial model for frequency of ANC utilization indicated an association between women's endorsement of attitudes justifying partner abuse with reduced frequency of ANC utilization (IRR = 0.88; 95% = 0.84–0.93). In the ordinal logistic regression model, endorsement of attitudes justifying partner abuse was a significant predictor of receiving a lower quality of ANC (AOR = 0.71, 95% CI = 0.59–0.86).

#### *Association between utilization of reproductive health services with other covariates*

Table 2 also shows the AORs and IRRs for utilization of reproductive health services according to other sociodemographic covariates. Having postsecondary or higher education and belonging to the middle to richest bands of wealth were associated with greater use of all seven indicators of reproductive health service utilization. Compared to women aged 15–19, those aged 20–34 years or 35–49 years were

more likely to receive ANC and to have a higher frequency of ANC visits. Regarding parity, compared to women with one child, those with 2–3 or 4 or more children were less likely to use ANC, to use ANC of lower quality, and to have lower rates of institutional delivery, and they had a lower likelihood of utilizing assisted delivery by skilled health personnel. Women residing in urban areas were 1.98, 1.10, 1.75, 2.37, 2.65, and 1.43 times more likely to receive any ANC, to have a higher frequency of ANC visits, to utilize higher quality of ANC, to have institutional delivery, to have delivery assisted by a medical professional, and to have PNC for their newborn infants, respectively.

Compared to women residing in the central region, those residing in the southern region of Lao PDR were 0.80, 0.70, 0.74, and 0.74 times less likely to have a higher frequency of ANC visits, to have institutional delivery, to have delivery assisted by a medical professional, and to have PNC for their newborn infants, respectively. Compared to women residing in the central region, those residing in the northern region of Lao PDR were 0.64, 0.76, 0.73, and 0.73 times less likely to have institutional delivery, to have delivery assisted by a medical professional, and to have PNC for mothers and their newborn infants, respectively. Sexually empowered mothers were 2.11, 1.12, 1.25, 1.63, 2.04, and 1.97 times more likely to receive any ANC, to have a greater number of ANC visits, to have institutional delivery, to have delivery assisted by a medical professional, and to receive PNC for themselves and their newborn infants, respectively, as compared to non-empowered mothers.

## Discussion

The present study was the first to examine the association between women's endorsement of attitudes justifying partner abuse and their use of reproductive health services in Lao PDR. The results of this large representative survey indicated that approximately seven in ten women believed that partner beating was justified under some circumstances, although the proportion of women who approved of partner beating differed between various scenarios. The rate observed in the present study was higher than that reported from other countries in Southeast Asia, including the Philippines (13%)<sup>25</sup>, Vietnam (28%)<sup>25</sup>, Indonesia (42%)<sup>26</sup>, Myanmar (51%)<sup>25</sup>, and Cambodia (55%)<sup>27</sup>. The current levels of approval of partner beating in Lao PDR represent a concern for public health practitioners and researchers. Furthermore, consistent with other studies in developing nations, the level of acceptance of partner beating was the highest among the most deprived strata of the society<sup>22–24, 26</sup>. Women who are poor, reside in rural areas, are not sexually empowered, and have lower levels of education are more likely to be accept-

ing of partner abuse than other women are. Studies in other countries<sup>28, 29</sup> also indicated that higher level of education and social empowerment provides women with a level of protection against such abuse.

The findings of the present study provide evidence of an association between women's endorsement of attitudes justifying partner beating and lack of ANC visits, lower frequency of ANC visits, and reduced quality of ANC. Further, the present findings indicate a significant association of women's endorsement of attitudes justifying partner abuse with low levels of institutional delivery use and reduced rates of delivery care by medical personnel. Such attitudes were also associated with not receiving PNC for mothers and newborn infants at any time after delivery. The findings of our study of the association between women's acceptance of wife beating or rape and utilization of ANC and delivery care is consistent with few of the previous studies<sup>14–16, 18</sup>. However, some previous studies did not find any association between women's acceptance of partner abuse<sup>17</sup>. There are several possible explanations of these inconsistencies, including context diversity or differences in the available measures for assessing women's endorsement of attitudes justifying such abuse. In addition to the associations between women's endorsement of attitudes justifying wife beating and both ANC and delivery care, our results indicated such attitudes act as an important psychosocial determinant of the use of postnatal care for mothers and their children.

Approving partner abuse can affect health service utilization via several mechanisms. Evidence indicates that women who accept partner abuse have reduced decision making autonomy, less freedom of movement, and greater economic dependency<sup>22</sup>, all of which reduce their decision-making capability regarding proper reproductive health care. It has also been reported that women who condone partner abuse are less likely to be sexually empowered<sup>23, 30</sup>, and are therefore less likely to deny sex with their partner and may be less likely to use condoms<sup>31</sup> for the fear of retaliation, thus increasing the risk of unwanted or unplanned pregnancies and the corresponding lower utilization of health services. Furthermore, women's endorsement of attitudes justifying partner abuse can result in insufficient health seeking behavior through different forms of physical, mental, and emotional health damage, such as trauma, walking complications, chronic pain, stress, depression, functional disorders, and other mental health complications<sup>32–34</sup> by increasing the risk of IPV<sup>24</sup>.

It is necessary to consider the limitations of this study when interpreting our findings. First, our analyses were cross-sectional, so it was not possible to determine the temporal link between women's acceptance of partner abuse and their use of reproductive health care within the confined



time frame of the survey. Further longitudinal studies regarding the relationship between women's endorsement of attitudes justifying partner abuse and their use of reproductive health services are required. Second, answers to subjective questions may contribute to the underreporting of such attitudes. However, the 2011–2012 LSIS indicated that the occurrence of such types of bias were alleviated by recruiting trained personnel and by guaranteeing anonymity to the respondents. Third, we used quantitative measures; however, the use of qualitative methods may be more effective in assessing women's attitudes regarding partner abuse. Therefore, qualitative studies are needed to gain an in-depth understanding of the contexts driving the association between women's attitudes toward partner abuse and their reproductive health care use. Fourth, the study outcomes, i.e., ANC use, delivery care, and PNC, were collected from the mothers retrospectively, which may have resulted in recall bias. To avoid such biases, however, we restricted our analyses to women living with their children born in the 2 years prior to the survey. Finally, the 2011–2012 LSIS did not provide any information regarding the availability and accessibility of reproductive health care components in the study regions. However, as the established association between endorsement of attitudes justifying partner abuse and use of reproductive health services was so strong, it is unlikely that the incorporation of such confounders into the model would have resulted in loss of significance in the link between such attitudes and our outcome variables.

Despite these limitations, the use of LSIS data has considerable advantages. Women in this survey were sampled from the whole country, covering both urban and rural areas. Therefore, the results can be generalized to all women aged 15–49 years in Lao PDR. In addition, the tools utilized for data collection have been standardized, subjected to pilot testing, and used in many different areas, thus expanding the validity and comparability of the results.

## Conclusions

In conclusion, women's endorsement of attitudes justifying partner abuse was a significant predictor of reproductive health service utilization among women in Lao PDR. Women's acceptance of partner abuse should be treated as a significant psychosocial determinant when developing interventions to improve reproductive health service utilization. Our results indicated that additional efforts are required from both governmental and nongovernmental organizations to improve women's rights and to develop appropriate reproductive health programs. These findings may also be applicable in other settings where gender inequities persist and where the rates of reproductive health service utiliza-

tion are low. Further longitudinal investigations are needed to assess the causal link between women's endorsement of attitudes justifying partner abuse and their use of reproductive health services as a public health research priority.

**Conflict of Interests:** The authors confirm that they have no competing interests.

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