

# Women's participation in childbearing decision-making and its effects on short-interval births in Rohingya refugee camps of Bangladesh



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## Summary

**Background** Women's involvement in family planning decision-making is significantly low among refugee women, potentially leading to an increased unintended and short interval pregnancies. This study aims to investigate the relationship between women's decision-making in childbearing and short-interval births among Rohingya refugee women in Bangladesh.

**Methods** Data from 719 women residing in three Rohingya refugee camps in Ukhiya, Cox's Bazar, Bangladesh, were analyzed. The outcome variable was birth spacing, categorized as short (<33 months between the two most recent births) or normal ( $\geq 33$  months between the two most recent births). The primary explanatory variable was women's involvement in fertility decision-making with their partner, classified as never, sometimes, and always. Multivariate logistic regression analysis was conducted to assess the association between the outcome and explanatory variable while adjusting for potential covariates.

**Findings** 58% of births occurred within a short interval, while almost 48% of women reported no participation in fertility decision-making with their partner. Short interval birth was found to be increasing with decreasing women's participation in fertility decision-making with their partner. Women who sometimes or never made fertility decisions with their partner had 1.20 times (95% CI, 1.01–1.88) and 1.69 times (95% CI, 1.06–2.29) higher likelihood of short interval births, respectively, compared to women who always decided with their partner.

**Interpretation** Low women's participation in fertility decision-making with their partner among Rohingya refugees increases short interval births and adverse maternal and child health outcomes, including mortality. This highlights the need for counselling programs to educate and empower women, promoting joint fertility decision-making by couples.

**Funding** This research did not receive any specific funds.

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**Keywords:** Short interval births; Family planning services; Maternal and child health; Bangladesh

## Introduction

Access to family planning and contraception remains challenging in refugee settings worldwide, including Bangladesh, with limited awareness of these options.<sup>1</sup> Consequently, unintended pregnancies (52%) and short interval births (<33 months interval between the two most recent births, 37%) are more prevalent in these contexts.<sup>2,3</sup> Such higher rates of short interval births are linked to adverse maternal and child health outcomes, including stillbirth, neonatal mortality, and maternal mortality.<sup>4</sup> This persistent issue of the refugee settings is

a global concern, contributing to nearly two-thirds of global maternal mortality and a significant proportion of the total under-five mortality.<sup>5</sup> Effectively addressing this issue requires reducing unintended pregnancies and increasing the spacing between births.<sup>6</sup> However, a major challenge lies in achieving this goal is the lack of comprehensive data regarding the extent of short interval births and their complex association with factors related to the refugee and host country situations.

To promote adequate birth spacing, it is crucial to ensure access to family planning and contraception.

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The Lancet Regional Health - Southeast Asia 2023;15: 100250

Published Online xxx  
<https://doi.org/10.1016/j.lansea.2023.100250>

### Research in context

#### Evidence before this study

Background research in the context of refugee populations, particularly the Rohingya refugee community in Bangladesh, has largely concentrated on sexual and reproductive healthcare services, particularly contraception, and the factors influencing them. However, there is a noticeable dearth of high-quality research examining the level of women's participation in decision-making concerning childbearing and its potential consequences on short interval births.

#### Added value of this study

This study provides compelling evidence highlighting the substantial absence of women's engagement in decision-making pertaining to childbearing within Rohingya refugee

population. Furthermore, the findings underscore the potential of enhancing women's participation in decision-making processes to alleviate adverse outcomes in Rohingya refugee camps, including maternal and child mortality.

#### Implications of all the available evidence

The findings of this study suggest that the existing family planning approach, which primarily focuses on women, inadequately empowers them to actively engage in decision-making concerning childbearing. As a result, this lack of empowerment contributes to low rate of contraceptive use, unintended pregnancies, and a higher prevalence of short interval births.

Achieving this goal involves promoting gender equality and empowering women to actively participate in their fertility planning.<sup>7,8</sup> Empowering women to make decisions regarding the number of children and the spacing between them is essential.<sup>9,10</sup> However, the extent to which Rohingya refugee women have the agency to exercise this decision-making power and its impact on birth spacing is largely unexplored, both in Bangladesh and globally. Existing research in the context of refugees primarily focuses on family planning, contraception, and maternal healthcare services, and their associated factors, as well as the gender-based violence.<sup>1,3–5,9,11–18</sup> This limited focus restricts policy-makers' ability to develop evidence-based policies and programs aimed at enhancing women's participation in reproductive decision-making and reducing the incidence of short interval births. Therefore, this study aims to explore the extent of women's participation in decision-making with their partner regarding when to have a child, short interval births, and their associations.

## Methods

### Study setting

The data for this study was collected through a comprehensive survey conducted in the Kutupalong Refugee camp, located in Ukhiya, Cox's Bazar, in April 2023. The Kutupalong Refugee camp was initially established in 1991, but experienced significant expansion following the most recent influx of Rohingya refugee in 2017. This influx was a result of a large-scale operation by the Myanmar military, which has been recognized as genocide by the International Court of Justice. As a consequence, the Kutupalong Refugee camp has become the largest refugee camp globally, providing shelter to over 100,000 Rohingya refugees within five-square-mile area. The camp is administratively divided into 30 sub-camps, each further divided

into 162 blocks, which represent the smallest unit within the sub-camps.

### Sampling strategy

The survey employed a three-stage stratified sample of women. In the first stage, five camps (Camp 2W, Camp 4, Camp 7, Camp 13, Camp 18) were randomly selected from the list of 30 camps, which included 89 blocks. In the second stage, ten blocks were randomly chosen using a lotter method (two blocks from each camp). In the third stage, reproductive aged women (age 15–49 years) residing in the selected camps and blocks who met the inclusion criteria were randomly included. The inclusion criteria were: i) having at least one child within two years of the survey, and ii) reporting their reproductive characteristics, such as pregnancy, births, family planning, and maternal healthcare service use.

To identify eligible women, trained data collectors, accompanied by the camp leader (Majhi), visited each household in the camp. They ensured that every eligible woman was included in the study. A total of 1483 women met these criteria, and participated in the survey, providing data through a structured questionnaire. The questionnaire was developed based on a previous survey conducted in 2019 and incorporated relevant questions from the validated and internationally recognized Demographic and Health Survey (DHS) questionnaire.<sup>3,19,20</sup> The questionnaire was pre-tested and corrected as appropriate.

Before collecting data, ethical approval for the survey was obtained from the Institute of Biological Science at the University of Rajshahi, Bangladesh (approval number 125/456/IAMEBBC/IBSc). Informed consent was obtained from the respondents before collecting data. Respondents' privacy was strictly ensured, and data collection was conducted in a separate room or corner without presence of anyone. In certain instances, our data collectors made multiple visits to the homes of selected respondents to ensure that data collection

occurred with sufficient privacy and comfort for the participants.

### Study sample

Our analysis was conducted on a subset of 719 women from the original sample of 1483 women who participated in the survey. These 719 women were selected based on specific inclusion criteria predetermined for this study. These criteria were as follows: (i) women who had given birth to at least two children, with the most recent delivery occurring within two years of the survey, (ii) women who provided data on the interval between their most recent and preceding childbirth, and (iii) women who reported their level of participation in deciding the timing of their next child with their partner.

### Outcome variable

The outcome variable examined in this study was birth interval, which was classified as either short (<24 months interval between the two most recent births) or normal ( $\geq 24$  months interval between the two most recent births), in accordance with the World Health Organization's relevant recommendation.<sup>21</sup> To obtain this information, the data collectors reviewed birth registration reports or immunization cards to gather data on the date of birth of the most recent child and the date of birth or termination of the second most recent child. In cases where any of these records was not available, the mothers were asked to recall from their memories, and the data collectors referred to memorable events to assist with the recollection process. The birth interval was then calculated by subtracting the two dates.

### Explanatory variable

The explanatory variable under investigation in our study was the degree of women's involvement in decision-making process with their partner regarding the timing of their next child. To gather data on this variable, we posed the following question to women: "To what extent did you participate with your husband in the decision-making process about the timing of your next child?" Responses were categorized as either "never," "occasionally," or "always".

### Covariates

Covariates considered in this study were selected based on a review of relevant literature in refugee settings.<sup>1,3-5,9,11-13</sup> These included women's age ( $\leq 19$  or  $\geq 20$ ), education (no education or at least some education), and work engagement outside the household (yes or no). Women's intentions regarding their most recent pregnancy, which occurred within two years of the survey and resulted in a live birth, were also included as an explanatory factor. These intentions were classified as wanted (if women reported that the pregnancy was wanted at the time of conception), mistimed (if they wanted to be pregnant later than when conception

occurred), or unwanted (if they did not want a child). Women's partner and household level characteristics were also included. These were women's partner age ( $\leq 32$ , 33–40,  $\geq 41$ ), women's partner education (no education or at least some education), women's partner working status (unemployed, day labor, or other voluntary work), number of children ever born ( $\leq 2$ , 3–4, or  $> 5$ ), and wealth quintile (lowest, second, middle, fourth, or highest). Wealth quintiles were generated using principal component analysis (PCA) applied to the household assets, following the established procedure for creating wealth quintiles in the DHS.<sup>22</sup>

### Statistical analysis

Descriptive statistics were used to summarize the characteristics of the respondents. To investigate the relationship between women's participation in decision-making with their partner about when to have the next child and the occurrence of short interval births, a multivariate logistic regression model was applied, adjusting for covariates. Additionally, we performed stratified analyses to investigate this relationship across different categories of the number of children ever born:  $\leq 2$ , 3–4, and  $\geq 5$ . Multicollinearity was assessed for each model. Moreover, as data come from multistage survey, sampling weight was considered in all analysis. Results were presented as adjusted odds ratios (aOR) with 95% confidence intervals (CI). All statistical analyses were performed using Stata software version 15.1.

## Results

### Background characteristics of the respondents

Table 1 presents the background characteristics of the study participants. A higher incidence of short interval births was observed among women having disadvantaged pregnancy and socio-demographic characteristics, such as unwanted pregnancies, illiteracy, and belonging to a lower wealth quintile.

### Women's joint decision-making with partner on timing of next child and birth intervals

Fig. 1 illustrates the distribution of short interval births among women based on their joint decision-making with their partners regarding the timing of the next child. We observed an 81% occurrence of short interval births among women who never participated in fertility decision-making with their partners. This rate is noticeably higher compared to women who sometimes or always participate in fertility decision-making.

### Distribution of birth in short interval by number of children ever born

The distribution of birth intervals among different numbers of children ever born is presented in Fig. 2. We found that the occurrence of short interval births increased with the number of children ever born.

Characteristics	Frequency (%)	Birth interval	
		Short interval ( $\leq 24$ months), n = 420	Normal interval ( $> 24$ months), n = 299
<b>Decided together with partner when to have a next child</b>			
Always	248 (34.4)	144 (34.3)	104 (34.8)
Sometimes	126 (17.5)	83 (19.8)	43 (14.4)
Never	345 (48.0)	193 (46.0)	152 (50.8)
<b>Pregnancy intention at conception of most recent child</b>			
Wanted	492 (69.3)	144 (34.3)	104 (34.8)
Mistimed	89 (12.5)	72 (17.1)	54 (18.1)
Unwanted	129 (18.2)	204 (48.6)	141 (47.2)
<b>Women's age</b>			
Mean age (IQR)	32.23 (27–38)	31.7 (26.5–37.0)	32.91 (27–40)
$\leq 19$	396 (55.1)	234 (55.7)	162 (54.2)
$\geq 20$	323 (44.9)	186 (44.3)	137 (45.8)
<b>Women's educational status</b>			
No education	606 (84.3)	349 (83.1)	257 (86.0)
At least some education	113 (15.7)	71 (16.9)	42 (14.0)
<b>Women's work engagement outside the household</b>			
Yes	80 (11.1)	45 (10.7)	37 (11.7)
No	639 (88.9)	375 (89.3)	264 (88.3)
<b>Women's partner education</b>			
Mean age (IQR)	40 (32–49)	40 (30–45)	40 (35–50)
$\leq 32$	178 (26.9)	118 (30.3)	60 (22.0)
33–40	206 (31.1)	121 (31.1)	85 (31.1)
$\geq 41$	278 (42.0)	150 (38.6)	128 (46.9)
<b>Women's partner education</b>			
No education	429 (66.0)	235 (62.0)	194 (71.6)
At least some education	221 (34.0)	144 (38.0)	77 (28.4)
<b>Women's partner occupation</b>			
Unemployed	100 (13.9)	61 (14.5)	39 (13.0)
Day labourer	267 (37.1)	169 (40.2)	98 (32.8)
Other voluntary work	352 (49.0)	190 (45.2)	162 (54.2)
<b>Children ever born</b>			
$\leq 2$	125 (17.4)	63 (15.0)	62 (20.7)
3–4	221 (30.7)	126 (30.0)	95 (31.8)
$\geq 5$	373 (51.9)	231 (55.0)	142 (47.5)
<b>Wealth quintile</b>			
Lowest	177 (24.6)	96 (22.8)	81 (27.1)
Second	139 (19.3)	83 (19.8)	56 (18.7)
Middle	139 (19.3)	80 (19.1)	59 (19.7)
Fourth	87 (12.1)	48 (11.4)	39 (13.0)
Highest	177 (24.6)	113 (26.9)	64 (21.4)

Table 1: Background characteristics of the respondents, N = 719.

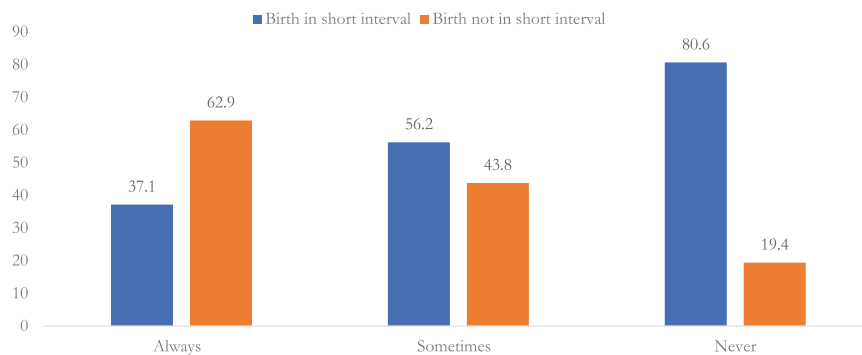
### Effect of women's participation in fertility decision-making on short interval birth

Table 2 presents the effects of women's participation in decision-making with their husband regarding the timing of the next child on short interval birth. We observed that women who sometimes and never made decisions with their husband regarding the next child had a 1.21 times (95% CI, 1.03–1.89) and 1.71 times (95% CI, 1.05–2.28) higher likelihood of experiencing a short interval birth, respectively, compared to women who always made decisions with their

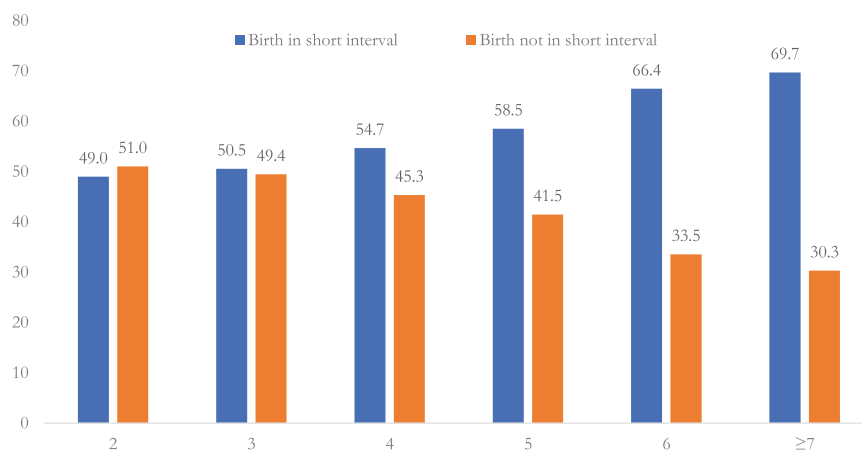
husband. Additionally, we found that the likelihood of short interval birth increased by 18% (aOR, 1.16, 95% CI, 1.03–1.38) with each additional child after the second.

### Effect of women's participation in fertility decision-making on short interval birth across number of children ever born

Table 3 presents the effects of women's decision-making participation with their partner on short interval births among three groups based on the number of



**Fig. 1:** Decision-making with spouse regarding the timing of the next child and birth interval.



**Fig. 2:** Distribution of short-interval births by the number of children ever born.

children ever born ( $\leq 2$ , 3 to 4,  $\geq 5$ ). We found for women with 2–4 children, those who sometimes or never participated in decision-making regarding the next child with their partner were 1.19 times (95% CI, 1.05–1.33) and 1.29 times (95% CI, 1.02–2.58) more likely to have short interval births than those who always participated. Similarly, for women with five or more children who sometimes or never participated in decision-making with their partner had 1.47 times (95% CI, 1.11–1.82) and 2.67 times (95% CI, 1.44–3.95) higher likelihoods of having short interval births compared to those who always participated.

## Discussion

The objective of this study was to explore the extent of women's involvement in decision-making regarding the timing of their next child, short interval births, and their interrelationship among the Rohingya refugee population in Bangladesh. The findings reveal that nearly half of Rohingya women did not participate in decision-making with their partner about the timing of their next child, while around 18% participated

intermittently. The average reported prevalence of short interval births was 58%, and this percentage rose to 81% among Rohingya women who did not engage in joint decision-making with their partners about childbearing. Additionally, the study demonstrated that women's limited or negligible participation in decision-making with their partners about childbearing increased the likelihood of short interval births, particularly for those with more than two children. These results suggest that a significant number of live births in the Rohingya refugee camps occur without active involvement of women in pregnancy decision-making, leading to heightened risks of complications due to short intervals and lower utilization of maternal healthcare services. Such factors could substantially contribute to higher rates of maternal and under-five mortality in the refugee camps.

The prevalence of short interval birth among Rohingya refugees is reported to be approximately three times higher than that of the local population in Bangladesh and twice as high as the global average.<sup>23,24</sup> This significant prevalence highlights a multifaceted challenges. However, one crucial aspect is the lower

Characteristics	Short interval birth, aOR	95% Confidence Interval
<b>Decide together with husband when to have next child</b>		
Always	1.00	
Sometimes	1.21**	1.03-1.89
Never	1.71**	1.05-2.28
<b>Pregnancy intention at conception of most recent child</b>		
Wanted	1.00	
Mistimed	1.11	0.63-1.78
Unwanted	1.84**	1.13-2.96
<b>Women's age</b>		
≤19	1.00	
≥20	1.11	0.78-1.53
<b>Women's educational status</b>		
No education	1.00	
At least some education	0.93	0.51-1.56
<b>Women's work engagement outside the household</b>		
Yes	1.00	
No	1.14	0.66-1.98
<b>Women's partner education</b>		
≤32	1.00	
33-40	0.70	0.44-1.06
≥41	0.55*	0.34-0.87
<b>Women's partner education</b>		
No education	1.00	
At least some education	1.41	0.92-2.12
<b>Women's partner occupation</b>		
Unemployed	1.00	
Day labourer	1.10	0.66-1.76
Other voluntary work	0.82	0.50-1.35
<b>Number of children ever born</b>	<b>1.18**</b>	<b>1.03-1.38</b>
<b>Wealth quintile</b>		
Lowest	1.00	
Second	1.11	0.69-1.80
Middle	0.97	0.58-1.62
Fourth	0.77	0.43-1.38
Highest	1.17	0.66-1.99
<b>Constant</b>	<b>0.61</b>	<b>0.30-1.29</b>
<b>Akaike Information Criterion (AIC)</b>	<b>885.76</b>	
<b>Bayesian Information Criterion (BIC)</b>	<b>943.96</b>	

Note: \*\*p < 0.05, \*p < 0.01, aOR: adjusted odds ratio.

**Table 2: Effects of women's participation in decision-making with their partner regarding when to have the next child on occurrence of short interval birth.**

Characteristics	Short interval birth across number of children ever born					
	≤2		3 to 4		≥5	
	aOR	95% CI	aOR	95% CI	aOR	95% CI
<b>Decide together with partner when to have next child</b>						
Always	1		1		1	
Sometimes	0.97	0.77-1.21	1.19**	1.05-1.33	1.47**	1.11-1.82
Never	1.11	0.82-1.42	1.29**	1.02-2.58	2.67**	1.44-3.95

Note: Each model is adjusted with women's age, education, work engagement outside the household, pregnancy intention at conception of most recent child, women's partner age, women's partner education, women's partner occupation and wealth quintile. \*\*p < 0.05, \*p < 0.01, aOR: adjusted odds ratio.

**Table 3: Effects of parental decision making and pregnancy intention on short interval birth across number of children ever born.**

participation of women with their partner in fertility decision-making, as reported in this study.

The limited participation of Rohingya refugee women in fertility decision-making with their partners can be attributed to various factors. One of the significant reasons is the systematic deprivation of basic human rights by the Myanmar government over the years, including access to education and healthcare services.<sup>25</sup> As a result, Rohingya women have limited knowledge and awareness of sexual and reproductive health, which hampers their ability to actively engage in fertility decision-making. Additionally, misconceptions have emerged, such as the false belief that their religion, Islam, forbids the use of family planning and contraception.<sup>1,3</sup>

Moreover, Rohingya refugee women often rely on their partners to make decisions concerning their reproductive health, including family planning, contraception, and participation in relevant awareness programs.<sup>1,3</sup> Complicating matters further, the community holds the belief that fertility and family planning are solely women's responsibilities, excluding men from the decision-making processes.<sup>3</sup> These challenges persist even after their relocation to Bangladesh, and new obstacles have arisen. For instance, the significant number of male fatalities caused by the Myanmar military has resulted in a higher number of females than males among the Rohingya refugee population, leading to a notable increase in polygamy.<sup>26</sup> This situation further exacerbates women's concerns about their partners potentially remarrying if their instructions regarding fertility-related decisions are now followed, thus hindering women's ability to participate in fertility-related decision-making.<sup>9,26</sup>

The existing challenges in family planning and contraception also hinder women's engagement in fertility decision making.<sup>3</sup> In response to the influx of refugees in 2017, the Ministry of Health and Family Welfare of Bangladesh, in collaboration with approximately 150 national and international development partners, including United Nations agencies, launched comprehensive programs to ensure family planning and contraception services for Rohingya refugees.<sup>27,28</sup> Initially, these programs initially prioritized women, drawing from the experience gained in local Bangladesh. However, despite subsequent attempts to involve men in existing family planning initiatives, these efforts have proven unsuccessful.<sup>3</sup> Consequently, men's participation in family planning programs among Rohingya refugees remains low, despite historically being a dominant group in comparison to women.<sup>9</sup> As a result, although a significant number of women are now aware of family planning and contraception and express desire to limit childbearing, particularly in challenging conditions such as undernutrition and short intervals, they often face barriers in sharing this intention with their partners.<sup>1,29</sup> This leads to higher rates of

non-use of contraception or women using contraception without informing their partners.<sup>3,29</sup> The prevalent use of injection-based contraceptives, such as Depo-Provera, supports this statement, as there is evidence that women primarily choose this method to conceal their contraceptive use from their partners.<sup>3</sup> In contrast, men, despite the widespread availability of male condoms, do not utilize contraception.<sup>9</sup> These factors indicate an increased risk of fertility in the camps, with short intervals between births being solely intentional from the partner's perspective and less or no participation by women.

We also found that the prevalence of short interval birth increased with the number of children. This association may be attributed to the higher participation of younger women in fertility decision-making compared to the older women.<sup>20</sup> To address this shift, it is essential to focus on the current family planning programs. These programs often target young and recently married women in the Rohingya refugee camps, as they are more likely to have higher education levels and be aware of sexual and reproductive healthcare services, thereby increasing their involvement in fertility decision-making and use of contraception.<sup>12,20</sup> However, this approach may not be as effective for older women, who often have different characteristics and preferences from young women.<sup>11</sup> Additionally, the higher number of children born in a short interval can also be attributed to existing challenges related to fertility.<sup>30</sup> One such challenge is the belief that having more children can lead to additional food and support from humanitarian organizations, thus fostering a preference for larger families.<sup>3,9</sup> Consequently, women facing such circumstances may be less inclined to use family planning and contraception, which reduces their participation in fertility decision-making and contributes to the occurrence of short interval births.

The findings of this study underscore the urgent need for comprehensive restructuring of the existing family planning programs in the Rohingya refugee camps. Specifically, there should be a focused effort to enhance men's involvement in family planning and encourage their utilization of contraception. Additionally, counselling programs should be established to educate women about the adverse consequences of closely spaced pregnancies. Empowering women to actively participate in fertility decision-making is crucial. This can be achieved by challenging the notion that fertility decisions are solely the domain of men and promoting the idea that it is shared responsibility of both partners. To accomplish this, targeted interventions need to be carefully designed and implemented in the refugee camps.

The primary strength of this study lies in its comprehensive analysis of primary data collected from a large and diverse sample. The data collection process employed validated questionnaires, and the outcome

variable was generated in accordance with WHO recommendations. Advanced statistical techniques were utilized to analyze the data while accounting for a wide range of confounding variables, both for the overall sample and when disaggregated by the number of children ever born. These findings are of high validity and provide a robust foundation for evidence-based policymaking and program implementation.

However, a notable limitation of this study is the use of retrospective survey data, which is inherently has a cross-sectional in nature. Consequently, the findings can only establish correlation and not causation. Additionally, data collection was limited to women who had experienced at least one live birth within two years prior to the survey, excluding cases of unsuccessful deliveries such as stillbirths, miscarriages, or abortions. Identifying and including these specific cases presented challenges. As the outcome and primary explanatory variable data were collected during the survey, covering a period of up to two years in the past, the possibility of recall bias exists, particularly regarding the primary explanatory variable based on women's self-reported responses. However, any potential bias is expected to be random. The outcome variable data were primarily based on existing documentation, reducing the risk of recall bias. Furthermore, community-level norms and other unmeasured factors may also influence occurrence of short interval births. Adjusting for these variables in the model could strengthen the study's findings, but data on these variables were not collected during the survey, limiting the study's ability to account for them in the analysis.

Around 58% of all births among the Rohingya population occurred within a short interval. Among the surveyed women, approximately 48% reported never participating in fertility decision-making with their partner, while only one-third of women consistently made decision with their partner regarding the timing of their next child. Notably, nearly 37% of short interval births were observed among women who always participated in such decision-making. This percentage increased to 56.24% among women who sometimes participated and rose to 80.62% among women who never participated in fertility decision-making. These findings highlights the significant challenges in improving maternal and child health outcomes among Rohingya refugees in Bangladesh, including the urgent need to reduce maternal and child mortality rates. To address these challenges, it is crucial to strengthen family planning programs. Additionally, efforts should focus on increasing men's involvement in fertility decision-making and promoting awareness among couples. By fostering equal participation and shared decision-making, we can strive towards better maternal and child health outcomes among the Rohingya refugee population.

#### Contributors

MNK and SJK designed the study. MNK conducted the formal analysis. MNK and SJK drafted the manuscript. All authors approved the final version of this manuscript.

#### Data sharing statement

The data for this study were collected through a cross-sectional survey, and all authors had access to it. Please contact the corresponding author for data sharing.

#### Declaration of interests

All authors declare no competing interests.

#### Acknowledgement

We acknowledge the support of Jatiya Kabi Kazi Nazrul Islam University, Bangladesh.

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