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ORIGINAL ARTICLE

Breastfeeding Knowledge, Attitude, Intention and Practice of Women in *Purdah* in Ibadan, Nigeria

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ABSTRACT

Background: Religious beliefs and practices have been implicated in mothers' breastfeeding practices; however, little is known about the breastfeeding intention and practices of women in *Purdah*. **Aims:** To assess the breastfeeding knowledge, attitude, intention and practices of women in *Purdah* in Ibadan, Nigeria. **Subjects and Methods:** Three hundred and sixty-three consenting women in *Purdah* (250 married and 113 unmarried) from seven Islamic and Arabic schools (*Madrasah*) participated in this cross-sectional study. A semi-structured interviewer-administered questionnaire was used to elicit data on the respondents' sociodemographic characteristics, breastfeeding knowledge and breastfeeding attitude. Breastfeeding intention and practices were also obtained from unmarried and married respondents respectively. **Results:** The average age of the respondents was 31.2 ± 6.6 years, 68.9 % were married while 56.4 % of the unmarried were engaged to getting married (*Khitba*). Two-thirds of the married women had adequate breastfeeding knowledge while 56.6 % of the unmarried women had inadequate breastfeeding knowledge. Overall, 6 out of every 10 women in *Purdah* had adequate breastfeeding knowledge. Also, 6 out 10 of the respondents had positive attitudes toward breastfeeding (65.2 % for married and 58.4 % for unmarried), however, less than half of the unmarried and married women had appropriate intention (47 %) to breastfeeding and good breastfeeding practices (47.2 %) respectively. A Significant relationship was found between breastfeeding knowledge, attitude and intention among unmarried women. Similarly, significant association also existed between breastfeeding knowledge, attitude and practices among married women in *Purdah*. **Conclusions:** Targeted breastfeeding intervention that would improve breastfeeding intention and practices of women in *Purdah* should be adopted in the teaching curriculum at Islamic and Arabic schools.

Keywords: breastfeeding, Muslim women, Islamic and Arabic schools, *Purdah*.

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1 INTRODUCTION

Breastfeeding is one of the important and cost-effective public health strategies for addressing child morbidity and mortality, especially in the first year of life in low and middle-income countries [1-3]. Despite the demonstrated benefits of breastfeeding, the prevalence and duration in several African countries are still below the international targets for early breastfeeding initiation, exclusive breastfeeding in the first six months of life, and continued breastfeeding for up to two years of age or beyond [4-6]. In Nigeria, where more than one in eight children dies before their fifth birthday [7], the proportion of children who are exclusively breastfed decreased from 17 % in 2003 to 13 % in 2008 [8] and then increased to 17 % and 29 % in 2013 and 2018 respectively [7, 9, 10]. Early initiation of breastfeeding among women, also increased from 36 % in 2008 to reach 42 % in 2018 [7, 8]. However, these increments are far below the 90 % recommended level by the World Health Organization (WHO) [11]. Despite the established short and long-term benefits of breastfeeding to both the mother and the child, a large number of women still breastfeed sub-optimally.

Lack of breastfeeding knowledge, and poor attitudes, as well as cultural and religious belief system have been implicated to influence mothers' breastfeeding decisions [12, 13]. Attitudes towards breastfeeding are known to have been formed early in life and influence eventual breastfeeding practices [14]. Studies have shown that the majority of young females already have an opinion on infant feeding as early as adolescence and early adulthood [15-16]. Breastfeeding decisions are based on

breastfeeding attitudes which are largely dependent on breastfeeding knowledge [17,18]. Nigerian mothers have been found to have an average level of awareness of the knowledge and advantages of breastfeeding, and suboptimum breastfeeding practices [19, 20]. Religion has been singled out as one of the factors that shape breastfeeding practices [21]. Research has established the link between breastfeeding practices and religious belief as well as religious gathering attendance [21-23].

Purdah, a Persian word translated to mean "curtain", is a religious and social practice of female seclusion among Muslim communities [24]. Through this practice, Muslim women are expected to stay at home to avoid mixing with men other than their husbands and close family members [25]. The practice of seclusion and restrictions for women in *Purdah* could hinder easy access to information on health. The practice of *Purdah* system has been identified as one of the barriers restricting women's access to health facilities including antenatal facilities where breastfeeding messages are taught [26, 27]. With a dearth of information on breastfeeding-related activities among women in *Purdah*, this study therefore aimed at assessing the breastfeeding knowledge and attitude of women in *Purdah*, as well as the breastfeeding practices and intention of married and single women in *Purdah* respectively in Ibadan, Oyo State, Nigeria.

2 Subjects and Methods

2.1 Study Design and Study Setting

This cross-sectional study was conducted among women in the metropolitan city of Ibadan located in the southwestern region of Nigeria. Ibadan is the third largest city by population in Nigeria after Lagos and Kano. The history of Islam in Ibadan can be traced as far back as 19th century and the city is full of Muslims from Yoruba and Hausa ethnic groups.

2.2 Study Population

The participants for the study were women in *Purdah* from seven randomly selected Islamic and Arabic schools also known as *Madrasah*. Women who had been in *Purdah* for at least two years and had been studying at the selected *Madrasah* for at least two years were included in the study. All the study participants were women in *Purdah* from the *Yoruba* ethnicity in Ibadan metropolis. In the current study, three categories of women in *Purdah* were identified; those who were single and yet to be betrothed, those that had been betrothed (*Khitba*) and those that had been married and had children below two years of age. All eligible and consenting participants were selected after due permission from the management of the participating *Madrasahs*.

2.3 Sample Size

Using the sample size calculation for a cross-sectional study with the current prevalence of exclusive breastfeeding at 29 % in Nigeria [7] and a 10 % non-response rate, a minimum sample size of 350 was estimated however, 363 women in *Purdah* consented to participate in the study.

2.4 Study Tools and Data Collection

A semi-structured interviewer-administered questionnaire with four sections was used to elicit information from the study participants. The questionnaire was divided into four sections: 1) The socio-demographic information of the respondents which included; state of origin, age of respondent; marital status and type of marriage, level of formal education as well as occupation; 2) The breastfeeding knowledge of the respondents which covered breastfeeding initiation, utilization of colostrum, exclusive breastfeeding, feeding with infant formula, breastmilk production, mode of breastfeeding, duration of breastfeeding, introduction of complementary foods and Islamic injunctions on breastfeeding; 3) The participants attitudes towards breastfeeding within one hour of delivery, introduction of colostrum, sufficiency of breastmilk in the first 6 months, introduction of water, use of herbs/herbal drinks for breastfed infants, feeding with infant formula, breastfeeding in public, sagging of the breast due to breastfeeding, breastfeeding according to Islamic injunctions, and partner support in breastfeeding; 4) The breastfeeding practices (for married) and intention (for unmarried) of the respondents which captured the breastfeeding initiation, duration, mode, exclusivity as well as introduction of colostrum and complementary feeding. The components of breastfeeding knowledge, attitude, practices and intention were adopted from a previous study in Ibadan [16].

2.5 Data Analysis

Data obtained were screened for errors and completeness and thereafter analyzed using Statistical Package for Social Science (IBM SPSS version 20.0) which were expressed as, frequencies, and percentages in tables and charts. The tools, for assessing the breastfeeding knowledge, attitude, intention and practices, were developed and piloted by the authors. The tools were a set of validated 12 points breastfeeding knowledge scale, 12 items on breastfeeding attitude which were scored on a Likert scale, and 7 points on breastfeeding intention and practice scales. Based on the scoring and categorization of the tools, respondents with a knowledge score of 7 and above were considered to have had adequate breastfeeding knowledge while those with scores below 7 were regarded to have inadequate breastfeeding knowledge. On the Likert scale of the Breastfeeding Attitude, the strongly agree and agree were merged to give agree while disagree and strongly disagree were merged to give disagree. The total

score attainable for the attitude was 12 and participants with attitude scores below 7 were regarded to have a negative attitude towards breastfeeding and those with a score of 7 and above had a positive attitude towards breastfeeding. The breastfeeding practices and intentions were each scored using a 7-point scale with scores below 4 categorized as poor breastfeeding practice and intention while those with scores of 4 and above were categorized as good breastfeeding practice and intention. Chi-square test was conducted to establish the association between breastfeeding knowledge, attitude, and practice/intention of the respondents. A p-value of less than 0.05 was considered to be statistically significant.

2.6 Ethical Approval

Ethical approval for this study was obtained from the University of Ibadan/University College Hospital (UI/UCH) Research and Ethical Review Committee at the Institute for Advanced Medical Research and Training (IMRAT) with an approval number UI/EC/18/079. The protocol for the study was carried out in accordance with the procedures approved by the Helsinki declaration, informed consent was obtained from all the participants prior to the study and due permission was obtained from the management of the *Madrasahs*.

3 Results

3.1 Background Information of the Women in *Purdah*

A total of 363 (250 married and 113 unmarried) women in *Purdah* who completed the study questionnaire, were assessed for their breastfeeding knowledge, attitude, practice and intention.

From Table 1, the average age of all the respondents was 31.3 ± 6.6 years. Among the married respondents, 14 % and 31.2 % were within 25 – 29 years and 25 – 29 years age group respectively while 17.6 %, 21.2 % and 16 % were within 30 – 34 years, 35 – 39 years and more than 40 years respectively.

Among the unmarried respondents on the other hand, one out of every 10 was less than 20 years old and 20 – 24 years was the most dominant age group (65.5 %) while 19.5 % and 2.6 % were within 25 – 29 years and 30 – 35 years respectively. Six out of every ten (60.4 %) of the married respondents were in monogamous marriage and 39.6 % were in polygamous marriage while 56.4 % of the unmarried respondents were engaged to get married (*Khitba*) and 43.6 % were still single. Furthermore, one out of every five married respondents had tertiary education, while about half (49.6 %) of the unmarried women in *Purdah* had only secondary education. The major occupation of the married women in *Purdah* was teaching (34.4 %) while only 14.2 % of the unmarried women were teachers. A quarter (24.8 %) of all the respondents were petty traders (28 % married; 17.7 % unmarried), another quarter (24.5 %) were artisans while 15.4 % and 7.2 % were students and housewives respectively.

Table 1. Socio-Demographic Characteristics of Women in *Purdah* in Ibadan

Parameters	Married		Unmarried		Total	
	N	(%)	N	(%)	N	(%)
Age categories (years)						
- < 20	-	-	14	12.4	14	3.8
- 20-24	35	14.0	74	65.5	109	30.0
- 25-29	78	31.2	22	19.5	100	27.5
- 30-34	44	17.6	3	2.6	47	12.9
- 35-39	53	21.2	-	-	53	5.8
- > 40	40	16.0	-	-	40	11.0
Marital Status						
- Single	-	-	49	43.6	49	13.5
- Engaged (*Khitba*)	-	-	64	56.4	64	17.6
- Married	250	100.0	-	-	250	68.9
Type of marriage						
- Monogamy	151	60.4	-	-		
- Polygamy	99	39.6	-	-		
Level of Education						
- Primary	59	19.6	16	23.0	75	20.7
- Secondary	78	31.2	56	49.6	134	36.9
- Tertiary	123	49.2	31	27.4	154	42.4
Occupation						
- Petty Trader	70	28.0	20	17.7	90	24.8
- Teacher	86	34.4	16	14.2	102	28.1
- Artisan	54	21.6	35-	30.9	89	24.5
- Student	24	9.6	32	28.4	56	15.4
- Housewife	16	6.4	10	8.8	26	7.2
Total	**250**	**100**	**113**	**100**	**363**	**100**

3.2 Breastfeeding Knowledge of the Women in *Purdah*

The breastfeeding knowledge of the women in *Purdah* presented in Table 2 reveals that almost all (94 %) of the married respondents and half (50.4 %) of the unmarried respondents had previously been exposed to breastfeeding information. Six out of every 10 of the married respondents correctly indicated that breastfeeding should be initiated within one hour of delivery, while less than half (48.7 %) of the unmarried respondents correctly indicated initiation of breastfeeding within one hour of birth. The majority (86.4 %) of the married respondents knew that colostrum should be given to children when produced by the mother, a lesser proportion (55.8 %) of the unmarried women knew that colostrum should be introduced to children. The majority (85.2 %) of married respondents and 52.2 % of the unmarried respondents believed that water should be introduced at six months. Also, four out of five of married respondents were able to correctly define term "exclusive breastfeeding" while only two out of four of the unmarried respondents were able to correctly define exclusive breastfeeding. The majority (85.6 %) of the married women knew that infant formula does not contain the same nutrients

Table 2. Breastfeeding Knowledge of Married and Unmarried Women in *Purdah* Residing in Ibadan

Parameters	Married		Unmarried		p-value	Total	
	N	(%)	N	(%)		N	(%)
Previous exposure to breastfeeding							
- Yes	235	94.0	57	50.4		292	80.4
- No	15	6.0	56	49.6	0.000	71	19.6
Breastfeeding initiation							
- Within 1 hour	148	59.2	55	48.7		203	55.9
- After 1 hour	59	23.6	48	42.5	0.001	107	29.5
- Don't know	43	17.2	10	8.8		53	14.6
Introduction of colostrum							
- Give to child	216	86.4	63	55.8		279	76.9
- Thrown away or discarded	23	9.2	50	44.2	0.000	73	20.1
- Don't know	11	4.4	-	-		11	3.0
Sufficiency of breast milk in the first 6 months							
- Yes	231	92.4	79	69.9		310	85.4
- No	15	6.0	31	27.4	0.000	46	12.7
- Don't know	4	1.6	3	2.7		7	1.9
Introduction of water to the infant							
- Before 6 months	31	12.4	46	40.7		77	21.2
- At 6 months	213	85.2	59	52.2	0.000	272	74.9
- Above 6 months	6	2.4	8	7.1		14	3.9
Definition of exclusive breastfeeding							
- Correctly defined	204	81.6	53	46.9		257	70.8
- Incorrectly defined	42	16.8	57	50.4	0.000	99	27.2
- Don't know	4	1.6	3	2.7		7	1.9
Infant formula and breast milk contain the same nutrients							
- Yes	36	14.6	90	79.6	0.000	126	34.7
- No	214	85.6	23	20.4		237	65.3
Breast size affects breast milk production							
- Yes	42	16.8	51	45.1	0.000	93	25.6
- No	204	81.6	62	54.9		266	73.3
Mode of breastfeeding							
- At mother's will	42	16.8	37	32.7		79	21.8
- As infant demands	129	51.6	54	47.8	0.001	183	50.4
- As scheduled by mother	69	27.6	22	19.5		91	25.1
- Don't know	10	4.0	-	-		10	2.7
Introduction of complementary food							
- Before 6 months	14	5.6	22	19.5		36	9.9
- At 6 months	199	79.6	63	55.8	0.000	262	72.2
- Above 6 months	37	14.8	25	22.1		62	17.1
- Don't know	-	-	3	2.7		3	0.80
Cessation of breastfeeding							
- 12 – 17 months	3	1.2	3	2.7		6	1.65
- 18 – 23 months	36	14.4	35	31.0	0.001	71	19.6
- > 24 months	211	84.4	75	66.4		286	78.8
Islamic injunction toward breastfeeding							
- Islam encourages mothers to breastfeed	239	95.6	91	80.5		330	90.9
- Others	11	4.4	13	11.5	0.000	24	6.6
- Don't know	-	-	9	8.0		9	2.5
Categorization of Participants' Knowledge							
- Adequate Knowledge	168	67.2	49	43.4	0.000	217	59.8
- Inadequate Knowledge	82	32.8	64	56.6		146	40.2
Total	**205**	**100.0**	**113**	**100.0**		**363**	**100.0**

with breastmilk, however the majority (79.6 %) of the unmarried respondents claimed that infant formula and breast milk contains same nutrients. Four out of every five of the married respondents and a little above half (54.9 %) of the unmarried respondents knew that size of the breast does not affect breastmilk production.

Table 2 further reveals that half (50.4 %) of all the women in *Purdah* either married (51.6 %) or unmarried (47.8 %) knew that the mode of breastfeeding should be on demand by the infant. Proportion of the respondents who knew that complementary feeding should be introduced at six months in line with WHO recommendations was higher (79.6 %) among the married women than (55.8 %) than the unmarried women. In all, seven out of 10 of all the women in *Purdah* knew that complementary feeding should be introduced at six months. The majority (84.5 %) of the married respondents knew that breastfeeding cessation should be after 24 months in accordance with the global recommendations for the Infant and Young Child Feeding (IYCF) and about 15.6% claimed breastfeeding should be stopped before 24 months. Meanwhile, two-thirds (66.4 %) of the unmarried respondents knew that breastfeeding cessation should be after 24 months. The majority (95.6 % of married; 80.5 % of unmarried) of the respondents were aware of the Islamic injunctions to breastfeed a child for 2 years. Overall, 4 out of every 10 of all women in *Purdah* had inadequate knowledge of breastfeeding. Among the married women, only a third (32.8 %) had inadequate knowledge of Breastfeeding while 6 out of 10 of the unmarried women in *Purdah* had inadequate knowledge of breastfeeding.

3.3 Attitude of the Respondents Toward Breastfeeding

The attitudes of married and unmarried women in *Purdah* towards breastfeeding are presented in Table 3. More than three-quarter of all the women agreed that mothers should breastfeed within one hour of delivery and that colostrum protects the infant from infection. The majority (80.4%) of the married women agreed that breastmilk alone is sufficient for a infant in the first 6 months of life, however only 41.6% of the unmarried women agreed. Also, 70.8% of the married women agreed that water should not be introduced to any infant before 6 months of life, but only about a third of the unmarried women were in agreement. Seven out of every 10 of the women in *Purdah* disagreed that Herbs/herbal drinks are beneficial to the health of the infants especially in the first six months, while 8 out of every 10 of the women agreed that breastfeeding is cheaper than infant formula and about 9 out of every 10 disagreed with the statement that formula feeding is healthier than breastfeeding.

Table 3. Attitude of the Women in *Purdah* Toward Breastfeeding

	Married			Unmarried			Total		
Attitude statements	Agree (%)	Neutral (%)	Disagree (%)	Agree (%)	Neutral (%)	Disagree (%)	Agree (%)	Neutral (%)	Disagree (%)
A mother should breastfeed her infant within one hour of delivery	77.6	6.0	16.4	70.8	8.0	21.2	75.5	6.6	17.9
Colostrum protects the infant from infections	86.8	7.2	6.0	54.9	10.6	34.5	76.9	8.3	14.9
Breast milk only is not sufficient for an infant in the first six months of life *	16.8	2.8	80.4	58.4	24.8	41.6	29.8	9.6	68.3
Water should be given to an infant before six months of life *	24.8	4.4	70.8	61.9	2.7	35.4	36.4	3.9	59.8
Herbs/herbal drinks are beneficial to the health of infants *	22.8	7.6	69.6	25.7	13.3	61.6	23.7	9.4	66.9
Breast milk is cheaper than infant formula	81.6	2.4	16.0	87.6	8.0	12.4	83.5	4.1	14.9
Formula feeding is healthier than breastfeeding *	10.0	1.6	87.9	15.0	4.4	80.5	10.7	2.5	85.4
Breastfeeding in public is embarrassing therefore it should be discouraged *	56.4	6.0	38.4	76.1	2.7	21.2	62.5	4.4	33.1
The size of breast determines the amount of breast milk *	17.6	7.2	75.2	53.1	8.8	38.1	28.7	7.7	63.6
Breastfeeding cannot be continued when semi solid or soft foods are introduced *	12.0	3.2	84.8	20.4	11.5	68.1	14.6	5.8	79.6
Breastfeeding makes the breast sag *	56.0	18.0	26.0	68.1	13.3	18.6	44.4	11.6	16.5
Husbands/Fathers should play a supportive role in breastfeeding	86.0	4.0	10.0	85.8	9.7	4.4	86.0	5.8	8.2
Categorization of Participants Attitude	**n**	**%**		**n**	**%**		**n**	**%**	
- Positive Attitude	229	63.1		163	65.2		66	58.4	
- Negative Attitude	134	36.9		87	34.8		47	41.6	

Agree = Strongly agree/tend to agree; Disagree = Strongly disagree/tend to disagree * negatively worded statements

discouraged however, a less proportion (56.4 %) of the married women were in agreement. While three quarter of the married women disagreed that the size of the breast determines the amount of breastmilk being produced by the mothers, more than half (53.1 %) of the unmarried women were in total agreement with this statement. The majority (84.8 % married; 68.1 % unmarried) of the women in *Purdah* agreed that breastfeeding can be continued with the introduction of semi-solid or soft food to the infant however, only one out of every 10 disagreed that breastfeeding makes the breast sag. Nine out of 10 women in *Purdah* agreed that the husband should play a supportive role in breastfeeding.

The overall attitude revealed that 6 out of every 10 women in *Purdah* had positive attitude towards breastfeeding and the proportion (65.2 %) of the married women with positive attitude higher than the unmarried women in *Purdah* (58.4 %).

3.4 Breastfeeding Practices of the Married Women in *Purdah*

The breastfeeding practices of the married women in *Purdah* are presented in Table 4. Less than half (46.4 %) of the women-initiated breastfeeding within the first one hour of birth while the majority (84.4 %) introduced colostrum to their infants. Out of the 162 women that were still breastfeeding their children, the majority (67.9 %) intended to breastfeed till 24 months however, from the 88 women who had stopped breastfeeding, less than half (48.9 %) breastfed for 18 – 23 months and 31.8 % breastfed for at least 24 months. More than half (54 %) breastfed on demand by their infants and only one out of 4 married women practiced exclusive breastfeeding. Complementary food was introduced by 63.6 % of the women at six months while only 6 % introduced complementary food before six months. Overall, less than half (47.2 %) of the women in *Purdah* had good breastfeeding practices while 52.8 % had poor breastfeeding practices.

Table 4. Breastfeeding Practice of Married Women in *Purdah* in Ibadan

Parameters	N	%
Initiation of breastfeeding		
- Within 1 hour	116	46.4
- After 1 hour	134	53.6
Giving Colostrum		
- Yes	211	84.4
- No	39	15.6
Current breastfeeding status		
- Yes	162	64.8
- No	88	35.2
Breastfeeding duration (n=88)		
- Less than 12 months	1	1.1
- 12 to 17 months	16	18.2
- 18 to 23 months	43	48.9
- 24 months and above	28	31.8
Intended time to stop breastfeeding (n=162)		
- Less than 12 months	0	0.0
- 12 to 17 months	5	3.1
- 18 to 23 months	47	29.0
- 24 months and above	110	67.9
Mode of breastfeeding		
- Anytime infant cries (on demand)	135	54.0
- At interval (Schedules)	115	46.0
Introduction of complementary food		
- Before 6 months	15	6.0
- At 6 months	159	63.6
- After 6 months	76	30.4
Exclusive Breastfeeding		
- Yes	62	24.8
- No	188	75.2
Categorization of Participants' Breastfeeding Practice		
- Good Breastfeeding Practice	118	47.2
- Poor Breastfeeding Practice	132	52.8
Total	**250**	**100.0**

3.5 Breastfeeding Intention of the Unmarried Women in *Purdah*

For the unmarried women in *Purdah*, their readiness and intention to breastfeed is presented in Table 5. Although about two-third (64.6 %) of the women indicated to have been well prepared to breastfeed, only 44.2 % indicated to had known all it takes to breastfeed and almost all the women (98.2 %) indicated their intention to breastfeed their infant later in the future. Among women in *Purdah* who were willing to breastfeed later in the future, 3 out of 5 intended to introduce breastmilk within the first one hour of birth and about half have the intention to breastfeed their infants on demand to breastfeed.

Table 5. Breastfeeding Intention of Unmarried Women in *Purdah* in Ibadan

Parameters	N	%
Preparedness for breastfeeding		
- Yes	73	64.6
- No	40	35.4
Knowledge of it takes to breastfeed		
- Yes	50	44.2
- No	63	55.8
Intention to breastfeed after child delivery		
- Yes	111	98.2
- No	2	1.8
Intended time to introduce Breast milk		
- Within 1 hour	70	61.9
- After 1 hour	40	35.4
- Don't know yet	3	2.7
How will you breastfeed your child		
- On demand	59	52.2
- At interval	54	37.8
Intended age to introduce complementary food		
- Before 6 months	34	30.1
- At 6 months	51	45.1
- After 6 months	25	22.1
- Don't know yet	3	2.7

Intention to breastfeed exclusively for 6 months		
- Yes	56	40.7
- No	67	59.3
Intended breastfeeding duration		
- Below 18 months	9	7.9
- 18.23 months	50	44.8
- 24 months and above	54	47.9
Will you breastfeed your infant according to Islamic injunction		
- Yes	111	98.2
- No	2	1.8
Indicated reasons (n=111)		
- Islam supports breastfeeding by admonishing women in the Quran to breastfeed for 2 years	85	76.6
- Islam encourages women to breastfeed very well because it makes the child to develop well	26	23.4
Categorization of Participants' Breastfeeding Intention		
- Good Breastfeeding Practice	53	47.0
- Poor Breastfeeding Practice	60	53.0
Total	**113**	**100.0**

married women in *Purdah*, breastfeeding knowledge was found to be associated with breastfeeding practice ($p < 0.001$) and breastfeeding attitude breastfeeding attitude was associated with breastfeeding practice ($p < 0.001$).

4 Discussion

Purdah system has become an increasing practice by both the married and single women in Islam and it is therefore essential to explore their breastfeeding knowledge, attitude, intention and practice. To our knowledge, this is the first study that presents the breastfeeding knowledge, attitude, intentions and practices among women in *Purdah* in Nigeria.

Muslim women in southwestern Nigeria have been reported to exhibit adequate breastfeeding knowledge [28]. Although findings from this study conform with an earlier study, [28] however, the proportion of the married women with adequate breastfeeding knowledge is more than that of the unmarried women. This implies that being married with previous child birth could increase the breastfeeding knowledge of mothers. The breastfeeding knowledge of women in *Purdah* as obtained in this study is in contrast with

Table 6. Socio-Demographic Characteristics of Women in *Purdah* in Ibadan

Parameters		Intention		p-value	Practice		p-value
		Poor Intention (N)	Good Intention (N)		Poor Practice (N)	Good Practice (N)	
Knowledge	- Inadequate Knowledge	48	16	< 0.001	62	20	< 0.001
	- Adequate Knowledge	12	37		70	98	
	Total (%)	**60 (53.1)**	**53 (46.9)**		**132 (52.8)**	**118 (47.2)**	
Attitude	- Poor Attitude	38	9	< 0.001	17	70	< 0.001
	- Good Attitude	22	44		115	48	
	Total (%)	**60 (53.1)**	**53 (46.9)**		**132 (52.8)**	**118 (47.2)**	

Less than half (45.1 %) of the unmarried women in *Purdah* intended to introduce complementary food at 6months while 30.1 % had the intention to introduce complementary food before 6 months. Four out of every 10 of the unmarried women in *Purdah* had the intention to breastfeed exclusively for six months and less than half (47.8 %) intend to breastfeed for at least 24 months. Yet the majority (98.2 %) still indicated their intention to breastfeed according to Islamic injunction which is the admonition by the Holy Quran that women should breastfeed for two years. Overall, less than half (47 %) of the unmarried women in *Purdah* had decent intention to breastfeed while 53 % had poor future breastfeeding intention.

This study further revealed the existence of the relationship between breastfeeding knowledge and intention as well as breastfeeding attitude and intention among the unmarried women in *Purdah* ($p = 0.000$). Likewise, among the breastfeeding knowledge among the Hausa women who are predominantly Muslim [29] and this further affirmed the cultural distinction in breastfeeding knowledge.

The adequacy of breastfeeding knowledge as exhibited by appreciable number of the women in Purdah especially the married women was also reflected in the attitude of the women in *Purdah* towards breastfeeding. Findings from this study revealed a more positive attitude among both married and unmarried women in *Purdah* towards breastfeeding and this further affirms the common assertions on the influence of religious values on mothers' perceptions and attitudes towards breastfeeding. Although the majority of women in Purdah in this study relatively had adequate knowledge and positive attitude towards breastfeeding, it was however, surprising to note that more than half had poor intention and practice of breastfeeding.

According to the WHO, it is recommended that early initiation within one hour of delivery can reduce the risk of neonatal death, especially due to infections and early contact with mother can promotes a closer emotional relationship between the mother and child [30]. Colostrum which is well known to be the first immunization an infant receives directly from mother after birth was found to be introduced by women in *Purdah* and this aligns with a study among Muslim mothers in Nigeria [29]. This could be a result of the majority of the women especially the married women in *Purdah* having good knowledge and were able to describe colostrum. Incidentally, almost the proportion of the mothers that were knowledgeable colostrum indicated to have introduced colostrum to their children. These findings on the knowledge and introduction of colostrum conforms with similar studies in southwestern region of Saudi Arabia [5]. The introduction of colostrum could therefore be linked to sociocultural belief and previous education on the significance of colostrum for survival in southwestern Nigeria.

The global target for exclusive breastfeeding for infants is set at 50% by 2025 [6] and according to this study, only 24.8% of the married women in *Purdah* breastfed their children exclusively breastfed for six months. This is similar to the findings obtained among mothers in northern Nigeria [29] and Islamic countries [31, 32]. All these findings which also align with the low national exclusive breastfeeding prevalence [7] could be attributed to the general belief that introduction of water alongside with breastfeeding is necessary quench for infants' thirst, and unnecessary cries due to perceived dehydration. The introduction of additional water other than breastmilk is a culturally acceptable means of ensuring more comfort and care to infants. The provision of date fruit with honey is a common practice among devoted Muslim that has compromised the attainment of exclusive breastfeeding.

Muslim mothers with good knowledge of infant feeding recommendations have been found to be more likely to have better feeding practices than mothers with poor knowledge [31, 32]. The finding from this study showed that the majority of the married women in *Purdah* with adequate knowledge of breastfeeding had good breastfeeding practices. Findings on the breastfeeding practice of the married women in *Purdah* in this study indicated a similarity with the breastfeeding intention of the unmarried women. Although the majority of the unmarried women were knowledgeable on the support of Islam for breastfeeding for two years, yet only two-third indicated to had been well prepared for breastfeeding and more than half revealed that they were not knowledgeable on the breastfeeding basics. In consonance to this study, findings from a study in Saudi Arabia demonstrated that women of childbearing age are more knowledgeable about breastfeeding and less than half of them intended to engage in key breastfeeding practices [33]. Similar to other studies [34-36], this study reported a positive association between intention to breastfeed and key breastfeeding practices. The significant association between breastfeeding knowledge and breastfeeding intention among unmarried women in *Purdah* as well as breastfeeding knowledge and breastfeeding practice among the married women in this study necessitate the need to prioritize the focused and qualitative breastfeeding education for women in *Purdah* for a better breastfeeding outcome.

5 Conclusions

This study revealed that a little more than half of the women in *Purdah* have adequate breastfeeding knowledge although the majority of the unmarried women had inadequate knowledge. The attitude of the women in *Purdah* either married or unmarried were positive towards breastfeeding, however, the breastfeeding intention and breastfeeding practices of the unmarried and married women in *Purdah* were poor and suboptimum.

In the light of these findings, a targeted breastfeeding-based subject is hereby recommended to be incorporated in the curriculum for teaching women in *Purdah* attending Madrasahs. This would play a pivotal role in improving their breastfeeding knowledge and attitude which could result into a better breastfeeding intention and practices by both the unmarried and married women in *Purdah*.

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