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Unplanned Pregnancy and Its Associated Factors

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Abstract

Introduction: Unplanned pregnancy is a major public health concern globally. Numerous studies found various factors that can predict or determine unplanned pregnancy. However, there were no studies that reported this problem in Malaysia. The objective of this study is to determine the prevalence of unplanned pregnancy in Malaysia and the associated factors.

Methods: This nationwide cross-sectional study targeted to women at postpartum period at government primary health care clinics throughout Malaysia. Structured questionnaire with face-to-face interview was used for data collection. The factors studied included mothers' age, husband's age, ethnicity, religion, marital status, education, occupation, household income, polygamous marriage, family support, contraception used, and disagreement of husband on contraception, smoking and alcohol consumption. History of emotional, physical and sexual intimate partner violence (IPV) were also studied.

Results: A total of 5727 Malaysian postpartum mothers were involved in this survey. The prevalence of unplanned pregnancy was 42.9% (95% CI: 38.6, 47.4). The multivariate logistic regression revealed that older mothers aged 45-49 years old (aOR: 8.010; 95%CI: 1.909, 33.013) and Muslim mothers (aOR: 2.465; 95%CI: 1.432-4.241) were significantly associated with unplanned pregnancy. In terms of household income, mothers with less than RM1000 per month were 1.712 (95% CI: 1.080, 2.713) times more likely to have unplanned pregnancy. The other significant associated factor was history of emotional intimate partner violence; aOR [1.720 (95% CI: 1.011, 2.925)].

Conclusions: Unplanned pregnancies were observed to be higher among older Muslim women from low income family. A possibility of unmet need for family planning should be considered and appropriate intervention strategies planned for these at-risk population.

Keywords: unplanned pregnancy, unwanted pregnancy, prenatal care, contraception, Malaysia

1. Introduction

An unplanned pregnancy is a pregnancy that is reported to have either unwanted (that is, the pregnancy occurred when no children, or no more children, were desired) or mistimed (that is the pregnancy occurred earlier than desired) (CDC, 2015; Yunikkerem, Ay, & Piro, 2013; Santelli et al., 2003; Singh, Darroch, Ashford, & Vlassoff, 2009). In contrast, intended pregnancies are when they happened at the 'right time' or later than desired (because of infertility or difficulties in conceiving).

Unplanned pregnancy is a major public health concern in developed and developing countries because of its adverse health outcomes among women and children. Globally many pregnancies are still unplanned. In the United States, the proportion of pregnancies that were unplanned increased slightly between 2001 and 2008 (from 48% to 51%), but, by 2011, it decreased to 45% (Finer & Zolna, 2016; Finer & Zolna, 2014).

According to a global report 2008, in all pregnancies 208.2 million, there was 41% unplanned pregnancy. Latin America/Caribbean showed 58% unplanned pregnancies, North America (48%), Europe (44%) followed by Africa (39%). Asia showed 37% unplanned pregnancy of all pregnancies 118.8 million (Singh, Sedgh, & Hussain, 2010; Sedgh, Singh & Hussain, 2014). Finding from the third National survey of sexual attitudes and life styles in Britain showed 16.2% of pregnancies with known outcome in the past year was unplanned (Wellings, et al., 2013; WHO, 2008).

Various reasons for unplanned pregnancies have been identified, which include non-use of contraceptive methods and contraceptive method failure. Non-use of contraceptive methods is one of the important reasons for unplanned pregnancy, which is mainly due to the high unmet need for contraceptives. Contraceptive method failure incorporates both users and technological faults (Kost, Singh, Vaughan, Trussell, & Bankole, 2008).

Numerous studies found various factors that can predict or determine unplanned pregnancy. However, there were no studies that report this problem in Malaysia. Thus, the objective of this study is to determine the prevalence of unplanned pregnancy in Malaysia and the associated factors.

2. Material and Methods

This is a nationwide clinic-based cross-sectional study of women with infants in the perinatal period (6-16 weeks) conducted at the Maternal and Child Health Unit at government primary care clinics throughout Malaysia. To ensure national representativeness, cluster sampling design was employed with health clinics considered as cluster. Health clinics within states were randomly selected and eligible mothers within the health clinics were considered as unit of analysis. Detail methodology has been described elsewhere by Ahmad et al. (2018).

The inclusion criteria for this study were mothers who delivered a child within 6 to 16 weeks of recruitment, who consented to be involved in the study. Only respondents of the legal age of 18 years or above were invited to join this survey. The exclusion criteria were those under the legal consenting age.

Data was collected using a combination of both face-to-face interview. Responses were captured using tablets with built-in quality control to minimize errors and was uploaded to the server in the institute after the quality check done. Data collection was done within the clinic vicinity. Information sheet and consent forms were made available to every respondent.

2.1 Variable Definition

In this study unplanned pregnancy was defined as responded 'yes' to the question "Was your last pregnancy planned or unplanned?" was used to categorise the pregnancy as planned or unplanned.

Ethnicity was classified based on the major ethnic groups in Malaysia: Malays, Malaysian Chinese, and Malaysian Indian. Sarawakian and Sabahan are indigenous groups from local Sarawakians and Sabahans and Orang Asal, and 'Others" was mostly composed of foreigners, immigrants, both legal and illegal, residing in Malaysia. The religion was based on the main religious in Malaysia, Islam, Buddhism, Hinduism, Christianity, Other religion and No religion.

The education levels were categorized based on the Malaysian education system. Respondents were considered to have no formal education/primary education if they had not attended any formal schooling or had only completed up to 6 years of primary school. Those who had completed 11 years of formal schooling were defined as having completed secondary education while respondents with diplomas or higher qualifications were considered as having completed tertiary education. Household income was categories by locally accepted group for household income, calculated based on the pooled income of family members and categorized into six group.

Family support during confinement was defined as an answer of 'yes' to the questions "Did you observe a confinement period after your last child birth" and "When you need help or have a problem, can you usually count on family member for support?" Polygamous marriage and contraception use was defined as an answer of 'yes' to the questions "Are you in a polygamous marriage?" and "Do you ever use any methods to avoid pregnancy?"

Intimate partner violence (IPV) was defined as a single or repeated experience of physical and/or sexual violence. IPV assessed based on the questionnaire used in the WHO Multicounty Study on Women's Health and Life Events (WHO, 2005). Physical violence was defined as positive responses to a history of being slapped, pushed, beaten, kicked, choked or threatened with a weapon, and sexual violence was defined as a positive response for any history of sexual coercion, sex out of fear or forced to engage in a degrading sexual act. Emotional violence was defined as a positive response ever having been insulted, publicly humiliated, intimidated or threatened or had a partner who threatened to hurt the respondent herself or someone she cared about (Ahmad NA, et al., 2018).

2.2 Statistical Analysis

SPSS version 21 was used for data analysis. Descriptive analysis was performed to study the distribution of unplanned pregnancy in pregnant women in Malaysia. The bivariate analysis was done looking for association between an independent variable and unplanned pregnancy. Finally, all the variables were included in the multivariate logistic regression model. The findings were presented as adjusted odd ratio with 95% confident interval and a p value less than 0.05 was considered significant.

3. Results

3.1 Socio-Demographic Profile of Sample

A total of 5727 Malaysian postpartum mothers were involved in this survey. Among age groups, the highest percentage was from those aged 25-29 years old (33.0%), while for the respondents' husband's age was from 30-34 years old (32.3%). More than half of them were Malay (63.3%), Islam (74.2%), mothers with secondary education (60.0%), not working mothers (53.6%). By household income, the highest percentage was from RM5000 and above group. Only 1.3% of them were not married or had no current partner. The details of socio-demographic characteristics of the respondents are shown in Table 1.

Table 1. Socio-demographic characteristics of the respondents (n=5727)

	Frequency	**%**
Respondent's age group		
18-19 years old	140	2.4
20-24 years old	903	13.9
25-29 years old	1842	33.0
30-34 years old	1749	31.5
35-39 years old	866	15.4
40-44 years old	207	3.6
45-49 years old	20	0.2
Husband's age		
15-19 years old	32	0.5
20-24 years old	368	6.0
25-29 years old	1429	23.9
30-34 years old	1794	32.3
35-39 years old	1098	21.4
40-44 years old	841	10.6
45-49 years old	204	3.4
50 years old and above	108	1.8
Ethnicity		
Malay	3889	63.3
Chinese	549	12.8
Indians	262	4.1
Sarawakian	253	5.8
Sabahan	471	9.0
Orang Asal	29	0.6
Others	274	4.3
Religion		
Islam	4501	74.2
Buddha	521	12.1
Hindu	237	3.7
Christian	414	8.3
Other religion	9	0.3
No religion	45	1.3

Education level		
No formal/primary education	382	7.2
Secondary education	3300	60.0
Tertiary education	2045	32.8
Occupation		
Working	2807	46.4
Not working	2919	53.6
Marital status		
Married/have partner	5654	98.7
Not married/no current partner	73	1.3
Household income		
Less than RM1000	513	11.2
RM1000-1999	1282	23.1
RM2000-2999	1044	18.2
RM3000-3999	894	14.4
RM4000-4999	532	8.3
RM5000 and above	1462	24.7
Family Support		
Yes	5229	90.2
No	464	8.8
No other family member	34	1.0
Polygamous marriage		
Yes	76	1.4
No	5560	98.6
Contraception use		
Yes	3011	55.3
No	2710	44.7
Disagreement of husband on contraception		
Yes	632	11.2
No	5094	88.8
Alcohol drink		
Yes	21	0.4
No	5634	98.6
Uncertain	70	1.4
Smoking		
Yes	28	0.5
No	5666	99.1
Uncertain	33	0.4
History of Emotional IPV		
Yes	5523	3.8
No	198	96.2

History of Physical IPV		
Yes	123	97.5
No	5592	2.5
History of Sexual IPV		
Yes	65	98.8
No	5659	1.2

3.2 Prevalence of Unplanned Pregnancy and Associated Factors

The prevalence of unplanned pregnancy was 42.9% (95% CI: 38.6, 47.4). By age group the prevalence was highest among older mothers aged 45-49 years old at 79.3.4% (95% CI: 53.7, 92.7) while for husband's age, the highest prevalence was among youngest husband aged 15-19 years old at 65.5% (95% CI: 37.6, 85.7). By ethnicity, Sabahan native showed the highest prevalence of 47.4% (95%CI: 36.4, 58.6). Mothers with no formal education or only primary education were found to be more prevalent to unplanned pregnancy with the prevalence of 47.2% (95% CI: 40.5, 54.0). According to household income, the highest prevalence was among less than RM1000 group at 49.1% (95% CI: 41.2, 57.1) (Table 2). Unmarried/no current partner mothers were noted to have significantly higher prevalence at 84.9% (95% CI: 70.9, 92.9) as compared to married mothers (42.4%; 95% CI: 38.0, 46.9). Mothers in polygamous marriage were found to have higher prevalence at 44.0% (95% CI: 27.8, 61.6) as compared to monogamous marriage at 42.5% (95% CI: 38.1, 47.0).

Table 2. Prevalence of unplanned pregnancy by socio-demographic characteristics (n=5727)

Variable	**Unplanned pregnancy**			**P value ***
	Frequency, n	**%**	**95% CI**	
Respondent's age group				<0.001
18-19 years old	76	48.7	33.0, 64.7	
20-24 years old	407	44.1	37.4. 51.0	
25-29 years old	772	41.3	36.4, 46.3	
30-34 years old	667	38.8	34.2, 43.7	
35-39 years old	394	47.7	41.4, 54.0	
40-44 years old	119	63.4	54.3, 71.7	
45-49 years old	16	79.3	53.7, 92.7	
Husband's age				0.006
15-19 years old	21	65.5	37.6, 85.7	
20-24 years old	176	47.4	37.0, 58.0	
25-29 years old	598	40.3	34.5, 46.2	
30-34 years old	709	40.7	36.0, 45.6	
35-39 years old	424	38.9	33.2, 44.8	
40-44 years old	253	48.5	41.2, 55.8	
45-49 years old	117	53.8	43.7, 63.6	
50 years old and above	56	56.0	42.4, 68.8	
Ethnicity				0.232
Malay	1719	44.9	40.5, 49.5	
Chinese	194	36.3	27.2, 47.1	
Indian	123	44.4	32.1, 57.5	
Sarawakian	95	29.3	14.8, 49.6	

Sabahan	198	47.4	36.4, 58.6	
Orang Asal	15	44.2	19.3, 72.4	
Others	109	39.9	29.7, 51.0	
Religion				0.064
Islam	1987	45.5	41.3, 49.8	
Buddha	187	36.5	27.6,46.5	
Hindu	113	43.8	29.3, 59.4	
Christian	144	30.3	19.1, 44.4	
Other religion	4	48.3	13.4, 85.0	
No religion	18	33.2	19.2, 51.0	
Education level				0.438
No formal/primary education	172	47.2	40.5, 54.0	
Secondary education	1445	43.0	38.2, 48.0	
Tertiary education	836	41.8	36.4, 47.5	
Occupation				0.330
Working	1144	41.5	36.7, 46.5	
Not working	1309	44.2	38.9, 49.6	
Marital status				<0.001
Married/have partner	2396	42.4	38.0, 46.9	
Not married/no current partner	57	84.9	70.9, 92.9	

***** Rao-scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom.

3.3 Maternal Factors

Mothers with no contraception use were noted with a higher prevalence of unplanned pregnancy at 45.8% (95% CI: 40.4, 51.3). Alcohol drink and smoking during pregnancy showed significantly higher prevalence of unplanned pregnancy with the prevalence of 56.3% (95% CI: 26.3, 82.3) and 73.7% (95% CI: 46.2, 90.2) respectively.

3.4 Support System

With regards to family support, mothers with no other family member showed the highest prevalence of unplanned pregnancy at 65.1% (95%CI; 37.2, 85.5). Alcohol drink and smoking during pregnancy showed significantly higher prevalence of unplanned pregnancy with the prevalence of 56.3% (95% CI: 26.3, 82.3) and 73.7% (95% CI: 46.2, 90.2) respectively. In term of intimate partner violence, mothers with history of emotional, physical and sexual prevalence were revealed to have higher prevalence at 61.0% (95% CI: 45.2, 74.8,), 60.5% (95%CI: 41.5, 76.9) and 76.2% (95%CI: 58.3, 88.0) accordingly (Table 3).

Table 3. Factor associated with unplanned pregnancy (n=5727)

Variables	Odd ratio, OR	CI (95%)	Adjusted odds ratio, aOR	
			aOR	CI (95%)
Family Support				
Yes	-		-	
No	1.299	0.74, 1.733	1.150	0.856, 1.545
No other family member	2.567	0.847, 7.779	2.867	0.751, 0.944
History of Emotional IPV				
Yes	2.142	1.150, 3.987	1.720	1.011, 2.925
No	-		-	
History of Physical IPV				
Yes	2.078	0.992, 4.350	1.329	0.728, 2.429
No	-		-	
History of Sexual IPV				
Yes	4.318	1.828, 10.199	2.746	0.842, 8.948
No	-		-	

3.5 Predictors of Unplanned Pregnancy

Table 4 shows the multivariate logistic regression revealed that elder mothers aged 45-49 years old (aOR: 8.010; 95%CI: 1.909, 33.013) and Muslim mothers (aOR: 2.465; 95%CI: 1.432-4.241) were significantly associated with unplanned pregnancy. In term of household income, mothers in the group of less than RM1000 per month were 1.712 (95% CI: 1.080, 2.713) times more likely to have an unplanned pregnancy. The other associated factor was history of emotional intimate partner violence with AOR of 1.720(95% CI: 1.011, 2.925).

Table 4. Multivariate analysis of the factors associated with unplanned pregnancy (n=5727)

Variables	Odd ratio, OR	CI (95%)	Adjusted odds ratio, aOR	
			aOR	CI (95%)
Respondent's age group				
18-19 years old	1.352	0.743, 2.458	1.279	0.753, 2.174
20-24 years old	1.121	0.900, 1.397	0.988	0.775, 1.267
25-29 years old	R		R	
30-34 years old	0.903	0.768, 1.061	1.000	0.805, 1.244
35-39 years old	1.296	1.018, 1.648	1.493	1.098, 2.030
40-44 years old	2.466	1.590, 3.822	2.731	1.586, 4.702
45-49 years old	5.453	1.672, 17.786	8.010	1.909, 33.013
Religion				
Islam	1.925	1.036, 3.577	2.465	1.432, 4.241
Buddha	1.326	0.701, 2.509	1.310	0.581, 2.953
Hindu	1.794	0.700, 4.599	0.990	0.158, 2.953
Christian	R		R	
Other religion	2.151	0.407, 11.360	2.112	0.560, 7.961
No religion	1.145	0.568, 2.308	1.360	0.483, 3.832

Household income				
Less than RM1000	1.654	1.115, 2.455	1.712	1.080, 2.713
RM1000-1999	1.370	0.993, 1.889	1.497	1.028, 2.179
RM2000-2999	1.377	1.069, 1.773	1.506	1.112, 2.040
RM3000-3999	1.295	0.980, 1.712	1.378	1.042, 1.822
RM4000-4999	1.404	1.021, 1.928	1.430	1.046, 1.957
RM5000 and above	R		R	

Control for husband's age, ethnicity, education level, occupation, marital status, polygamous marriage, contraception use, disagreement of husband on contraception, alcohol drink, and smoking.

R=reference.

4. Discussion

There are many factors associated with unplanned pregnancies and studies have reported different determinants and different predictors on this issue. These factors can be divided into sociodemographic and socioeconomic which included couple's age, their socioeconomic status, education, occupational status and residential area. The associated fertility related factors included mother's age at the time of marriage, gravidity and parity. Other related factors included the use of contraceptives, substance abuse and intimate partner violence.

Our findings revealed, 42.9% of the pregnancies were unplanned. The analysis was focused on the last pregnancy with the intention of minimizing recall bias. The current rate is lower than findings in the United States, a developed country, 49% of pregnancies were unplanned (CDC, 2015) but consistent with reports from other studies which reported average prevalence to be 35% ranging from 13% to 82% (Ali, Tikmani, & Qidwai, 2016; Habte, Teklu, Melese & Magafu, 2013). There is no data on unplanned pregnancies in Malaysia however various data estimates 25% of unplanned pregnancies in Malaysia (Helen, 2015).

4.1 Maternal Age

Our study showed that the prevalence of unplanned pregnancies was highest among the older mothers aged 45- 49 years old at 79.3%. Studies found that women's age was the best predictor of pregnancy intention (Ali, Tikmani, & Qidwai, 2016). In a systematic review study, age was positively related to unplanned pregnancy and more studies found older women were more likely to experience unplanned pregnancy compared to younger women (Ali, Tikmani, & Qidwai, 2016). On the contrary, studies from Nigeria, Vietnam and Bangladesh have found that women usually experienced unplanned pregnancy at extreme childbearing age groups, both the younger and older age groups (Okonofua, Odimegwu, Ajabor, Daru, & Johnson, 1999; Cu Li, Magnani, Rice, Speizer, & Bertrand, 2004; Rahman, 2012; Kamal & Islam, 2011). Older women were found to prefer natural contraceptive methods compared to modern contraception which resulted in contraceptive failure. (NIPORT, 2009).

4.2 Education Level

Mothers with no formal education or only received a primary education were found to be more prevalent to an unplanned pregnancy with the prevalence of 47.2% in this study. Women's education is an important factor in explaining the fertility and fertility behavior of women. Many studies concluded a significant relationship between educational level and the likelihood of unplanned pregnancies (Ali, Tikmani, & Qidwai, 2016). Our finding is consistent with other studies which showed that women with primary or less education were more likely to experience unplanned pregnancy (Habte, Teklu, Melese & Magafu, 2013; Tebekaw, Aemro, & Teller, 2014; Islam & Rashid, 2005; Takahashi et al., 2012). As the educational level increases the prevalence of unplanned pregnancies would decrease. Literate women have more knowledge on their rights and responsibilities to participate and hence can plan for their own reproductive and sexual health (Habib et al., 2017).

4.3 Socioeconomic Status

A systematic review found women with high economic status were less likely to experience unplanned pregnancy (Ali, Tikmani, & Qidwai, 2016). Significant relationships were found between economic factors and pregnancy intention (Okonofua, Odimegwu, Ajabor, Daru, & Johnson, 1999; Adhikari, Soonthorndhada, & Prasartkul, 2009). Similar to our findings, mothers in the group of less than RM1000 per month were 71% higher have an unplanned pregnancy. The financial constraint was the most important factor determining the intention of pregnancy. Generally, women with high economic status were less likely to experience an unplanned pregnancy. These

findings suggest that women from poor income group were less likely to afford family planning services or less likely to have access to the family planning services (NIPORT, 2009).

4.4 Socio Cultural, Religion and Women's Autonomy

In our study Muslim mothers were found to be significantly associated with unplanned pregnancy. This is similar to a study done in Bangladesh, where Muslim women, as compared to non-Muslim, had a higher incidence of unplanned pregnancy (30.9% vs. 20.3%) (Cu Li, Magnani, Rice, Speizer, & Bertrand, 2004). Malaysia, being a Muslim country, the majority (61%) of our population is a Muslim (DOSM, 2010). Our findings could be related to the Islamic institution who put husbands as the one in charge of the family and any other decision making pertaining family matters (Omran, 1992).

Social norms also limit women's freedom to make important decisions as they are dependent on their male partners for their daily living (Ali, Ali, & Suhail, 2016; Rahman, 2012). In developing countries, men are usually considered as the main decision maker especially in the male dominant societies. The men will decide on the health seeking behavior pattern of the family members including the use of contraception. (Ali, Ali, & Suhail, 2016; Rahman, 2012). Women who have discussed the intention of taking family planning showed less prevalence of unplanned pregnancy compared to women whose have never discussed it with the husbands (28.4% vs. 31.1%) (Kamal & Islam, 2011). Findings relate that Muslim women are less likely to use modern methods due to their traditional beliefs and cultural norms and older women are more reluctant to use modern methods as compared to their younger counterparts, resulting in higher risk of unplanned pregnancy among the former (NIPORT, 2009).

A report had shown contraceptive prevalence rate in Malaysia for all available method is 55% and for modern methods is 32%. This is much lower compared to global, 63% and lesser than neighbouring countries, Singapore 55.1% and Thailand 77.5%. (Najimudeen & Sachchithanantham, 2014). Husband's objection (8% - 12.6%) contributed for the reasons for not using contraceptive methods. (Najimudeen & Sachchithanantham, 2014).

4.5 Emotional Intimate Violence

The other associated factor that was significant in our study was history of emotional intimate partner violence. In a study done by Stella Martin et al, similar findings were noted. Emotional intimate partner violence was associated with unplanned pregnancy aOR=2.5, 95% CI + 1.5 – 4.3) (Martin-de-las-Heras, Velasco, de Dios Luna, & Martin, 2015).

Strengths and Limitations

The main strength of our study is the large nationally represented data with a robust method. The response rate was good (85.9%) and various socio-demographic and socio-cultural factors were examined.

Nevertheless, our findings have several limitations. There was no data on the locality of the samples. Accessibility to health services was not explored. Details of the unintended pregnancy should be probed further as it could be 'mistimed' instead of unintended.

Conclusion and Policy Implication

This study examined the prevalence and socioeconomic correlates of unplanned pregnancy among Malaysian women who attended the government primary health care clinics during the perinatal period. Findings revealed overall, 42.9% of the most recent pregnancies were unplanned. Significant predictors of unplanned pregnancy found were elder mothers aged 45–49 years old, Muslim mothers, mothers of lower household income and mothers with a history of emotional intimate partner violence. Studies should be conducted to find reasons for the unplanned pregnancies. The relationship between education, health economic status and women's sexual and reproductive health practices should be studied. The positive association between unplanned pregnancies among Muslim women reflects an association with the religious and cultural belief. Therefore, there is a special concern to see the effect of religion and culture on contraceptive practices. Family planning services are offered free of charge by government health facilities in Malaysia. Although services are free, contraception usage rates are still low. A study should be conducted to identify the unmet needs of family planning in Malaysia.

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Competing Interests Statement

All authors declare no competing interest.

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