ORIGINAL ARTICLE

Risk factors for women attending pre-pregnancy screening in selected clinics in Selangor

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Abstract

Background: The Ministry of Health is committed to achieve Millenium Development Goal (MDG) MDG 4 and 5 by 2015 and include pre-pregnancy care as a strategy. This study evaluates the risk factors detected during the pre-pregnancy screening at selected public primary care clinics in Selangor.

Objectives: The objectives of this study were to determine the proportion of women with risk factors receiving pre-pregnancy care in selected clinics in Selangor, their socio demographic features, the types of risk factors detected and their significance.

Methods: A retrospective review using secondary data was carried out from the month of March until June 2013 in four public primary care clinics in Klang and Petaling districts of Selangor. Data were obtained through non-probability sampling, using the pre-pregnancy screening form utilised in 2012, which is a standard questionnaire to determine the presence of risk factors. Women with at least one defined risk factor were considered as being at risk of an adverse obstetric outcome. Data were analysed using SPSS version 16.

Results: A total of 840 pre-pregnancy screening forms were collected. However only 614 (73.1%) were analysed and studied. The proportion of women with at least one risk factor was 68.8% (95% CI: 65.1, 72.5). The majority was Malays who had tertiary education and earned more than RM 1000. Most were in the reproductive age group of 18–35 years old (350, 82.9%). The mean age was 28.68 + 5.78 years. Most of the women were parous (259, 65.1%) and did not practice any form of contraception (308, 80.8%) despite having risks. The percentage of those not receiving any form of immunisation was small i.e. 9.8% but it was of importance and needed to be addressed prior to the conception. This study did not reveal any person with mental disorder or those who endured domestic abuse. Additionally, 3% (12) of them had unhealthy lifestyle habits, which include smoking, alcohol and substance abuse. Approximately one-third (212, 35.2%) of the women screened were overweight and obese, putting them at risk of developing gestational diabetes mellitus, pregnancy induced hypertension or deep vein thrombosis. The mean body mass index (BMI) for those at risk was 25.36 + 5.94 compared to 21.06 ± 1.46 for those with no risk. This study also found a small percentage of women with raised blood pressure (3.9%), abnormal physical examination (1.5%) and anaemia (14.4%), which need to be investigated and treated prior to conception.

Conclusion: More than half of the women who attended the pre-pregnancy screening were found to have at least one risk factor.

Introduction

Every pregnancy should be planned, wanted and safe. A healthy baby and a healthy mother are the valued hopes and dreams of families of all cultural heritages. Although there have been significant breakthroughs in medical technology and its application, yet the improvements in maternal and infant health outcomes have slowed down significantly and in some cases even deteriorated.[1] One of the reasons is failure to intervene before pregnancy to detect, manage, modify and control maternal behaviors, health conditions and risk factors that contribute to adverse maternal and infant outcomes.[1]

Pre-pregnancy care ensures a healthy mother and baby through a planned parenthood. It aims to recognise and modify life style, medical, social, and behavioural risk to a woman's health and pregnancy outcome.[2]

Interventions delivered prior to conception could improve pregnancy outcomes, and further reduce maternal and prenatal perinatal mortality and morbidity.[1,3]

Recognising its importance, Malaysia has introduced pre-pregnancy care through its Perinatal Care Manual in the year 2002. Since then it has undergone several revisions, the latest being the third edition in 2013.[4] It is one of the strategies employed by the Ministry of Health to achieve the MDG 4 and 5 goals by 2015.[5] Pre-pregnancy care is now available in all government health clinics and hospitals throughout the country.

This research was undertaken to study the proportion of risk factors among women who were screened during their attendees to the clinics before conception in four of the busiest public primary care clinics in Selangor. The information can be applied to improve pre-pregnancy care and further enhance pregnancy outcomes.

Methodology

This was a retrospective review conducted in four public primary care clinics in Selangor. The clinics selected were Klinik Kesihatan Shah Alam and Kelana Jaya from the district of Petaling; and Klinik Kesihatan Bukit Kuda and Kapar from the district of Klang. A total of 840 patients who attended pre-pregnancy screening in these clinics between the months of June and December 2012 were included in the review.

These patients' points of entry were either from the outpatient clinic or the maternal and child health clinic as follows:

1. Outpatient clinic
   - Wellness clinic
   - Premarital HIV screening program
   - Thalassemia screening program
   - Adolescent clinic
   - Non-communicable disease clinic

2. Maternal and child health clinic
   - Family planning services
   - Child health services
   - Postnatal services

In this screening program, women were offered pre-pregnancy screening when they were either a prospective couple intending to get married or married couples planning for a pregnancy. Others included those in the reproductive age group (15–44 years of age, WHO definition on Women's Health Fact Sheet 334, Nov 2009) with any of the following criteria:

i) 35 years old or older
ii) Obesity
iii) Medical illness
iv) Previous miscarriages/stillbirths/early neonatal death
v) Inherited abnormalities
vi) Babies who have inherited abnormalities
vii) Congenital structural abnormalities
viii) Babies with congenital structural abnormalities
ix) History of genetic disorders

Those who agreed were screened using a standardised pre-pregnancy screening form prepared by the Ministry of Health, Malaysia. Secondary data were obtained from these pre-pregnancy screening forms. Data collection and analysis were carried out from the months of March until June 2013.

Women at risk was defined as those having any one of the following risk factors:[6,7]

- Age: < 18 years old or > 35 years old
- Parity: > 5
- Lifestyle habits, e.g. smoking, alcoholism and substance abuse
- High risk sexual behavior
- Overweight/Obesity
- Past obstetric history, e.g. recurrent miscarriages (≥ 3), instrumental delivery etc.
- Medical history, e.g. hypertension, diabetes mellitus, bronchial asthma, anemia etc.
- Surgical history, e.g. caesarean section, uterine surgery, pelvic surgery etc.
- Family history, e.g. genetic disorders and congenital structural abnormalities
- Social history, e.g. psychosocial, stress at work and in relationship
- Medications, e.g. anticonvulsants, warfarin, benzodiazepenes and certain antibiotics
- Vaccination, e.g. absence of rubella, hepatitis B or tetanus immunisation

Women with at least one defined risk factor were considered as being at risk for an adverse obstetric outcome.

Data on socio-demographic characteristics and risk factors were entered into the SPSS version 16.

Results

Out of the 840 patients screened, only 614 (73.1%) were included in the review. The remaining 226 patients had to be excluded due to utilisation of different screening forms. Some of the clinics used the 1st edition version while some used the 2nd edition version, which deferred in some of the risks screened. For example in the section for obstetrics and gynaecology history the latest edition had a section on baby weight >4 kg, symptoms of vaginal discharge and perimenopausal symptoms. This section was not present in the older version.

Socio-demographic characteristics

Referring to table 1, the majority of the women with risk factors were Malays (296, 70.1%). Most of them were in the reproductive age group of 18–35 years old (350, 82.9%). The mean age was 28.68 ± 5.78 years. About half of them were married (216, 53.7%) and had attained tertiary education (200, 48.0%). Most of them earned more than RM1000 a month (313, 82.8%).

Table 1. Socio-demographic profile

	With risk factor frequency (%)	**Without risk factor frequency (%)**	**Total frequency (%)**
Race	*(n = 422)*	*(n = 192)*	*(n = 614)*
Malay	296 (70.1)	153 (79.7)	449 (73.1)
Chinese	61 (14.5)	14 (7.3)	75 (12.2)
Indian	38 (9.0)	13 (6.8)	51 (8.3)
Others	27 (6.4)	12 (6.3)	39 (6.4)
Age (years)	*(n = 422)*	*(n = 192)*	*(n = 614)*
17 and below	5 (1.2)	0 (0.0)	5 (0.8)
18–35	350 (82.9)	192 (100.0)	542 (88.3)
36 and above	67 (15.9)	0 (0.0)	67 (10.9)
Age (Mean ± SD)	*28.68 ± 5.78*	*26.71 ± 3.62*	*28.06 ± 5.28*
Marital status	*(n = 402)*	*(n = 186)*	*(n = 588)*
Not married	166 (41.3)	111 (59.7)	277 (47.1)
Married	216 (53.7)	72 (38.7)	288 (49.0)
Divorced/widowed	20 (5.0)	3 (1.6)	23 (3.9)
Education	*(n = 417)*	*(n = 191)*	*(n = 608)*
No formal education	7 (1.7)	4 (2.1)	11 (1.8)
Primary	21 (5.0)	6 (3.1)	27 (4.4)
Secondary	189 (45.3)	70 (36.6)	259(42.6)
College/University	200 (48.0)	111 (58.1)	311 (51.2)
Income	*(n = 378)*	*(n = 176)*	*(n = 554)*
No income	22 (5.8)	11 (6.3)	33 (6.0)
Less than 500	7 (1.9)	1 (0.6)	8 (1.4)
501–999	36 (9.5)	10 (5.7)	46 (8.3)
More than RM 1000	313 (82.8)	154 (87.5)	467 (84.3)

Risks and associated factors

From this review, the prevalence of women with at least one risk factor was 68.8% (95% CI: 65.1, 72.5).

Table 2 showed that the majority of women screened did not practice any form of contraception despite having risks (308, 80.8%). More than half were parous (259, 65.1%). This demonstrated unmet needs and emphasis should be given to initiate contraception in this group of women. Approximately one-third (212, 35.2%) of them were overweight and obese, putting them at risk of developing gestational diabetes mellitus, pregnancy induced hypertension or deep vein thrombosis. The mean body mass index (BMI)

for those at risk was 25.36 ± 5.94 compared to 21.06 ± 1.46 for those with no risk.

Physical examination revealed that 14.4% (51) of these women had anaemia, 3.9% (16) had raised blood pressure and 1.5% (6) had abnormal physical examination. These findings need to be investigated and treated prior to conception.

In terms of previous history, 13.9% (52) of women with risk factors had previous medical history, 13.0% (52) had significant past obstetric history, 12.1% (48) had surgical history, 3.2% (13) had past gynaecology history while 1.2% (5) had positive genetic family history.

Although, the percentage of those not receiving any form of immunisation and those on medication was small, i.e. 9.8% and 3.9% respectively, these factors were still important and needed to be addressed prior to conception. Attention should also be given to those with unhealthy lifestyle habits, which include smoking, alcohol and substance abuse (12, 3%). This study did not reveal any person with mental disorder or those who endured domestic abuse.

Table 2. Risk and associated factors among women screened

	With risk factor frequency (%)	**Without risk factor frequency (%)**	**Total frequency (%)**
Parity	*(n = 398)*	*(n = 185)*	*(n = 583)*
Nulliparous	139 (34.9)	79 (42.2)	217 (37.2)
1–5	250 (62.8)	107 (57.8)	357 (61.2)
6 and more	9 (2.3)	0 (0.0)	9 (1.5)
Contraception	*(n = 381)*	*(n = 173)*	*(n = 554)*
No	308 (80.8)	155 (89.6)	463 (83.6)
Yes	73 (19.2)	18 (10.4)	91 (16.4)
Immunization	*(n = 407)*	*(n = 178)*	*(n = 585)*
Yes	367 (90.2)	166 (93.3)	533 (91.1)
No	40 (9.8)	12 (6.7)	52 (8.9)
Medication	*(n = 363)*	*(n = 174)*	*(n = 537)*
Nil	349 (96.1)	172 (98.9)	521 (97.0)
On medication	14 (3.9)	2 (1.1)	16 (3.0)
Medical History	*(n = 375)*	*(n = 176)*	*(n = 551)*
No	323 (86.1)	164 (93.2)	487 (88.4)
Yes	52 (13.9)	12 (6.8)	64 (11.6)
Surgical History	*(n = 397)*	*(n = 188)*	*(n = 585)*
Yes	48 (12.1)	3 (1.6)	51 (8.7)
No	49 (87.9)	185 (98.4)	534 (91.3)
Obstetric History	*(n = 401)*	*(n = 190)*	*(n = 591)*
No	349 (87.0)	187 (98.4)	536 (90.7)
Yes	52 (13.0)	3 (1.6)	55 (9.3)
Gynaecology history	*(n = 401)*	*(n = 191)*	*(n = 592)*
No	388 (96.8)	180 (94.2)	568 (95.9)
Yes	13 (3.2)	11 (5.8)	24 (4.1)
Genetic Family history	*(n = 402)*	*(n = 191)*	*(n = 593)*
No	397 (98.8)	190 (99.5)	587 (99.0)
Yes	5 (1.2)	1 (0.5)	6 (1.0)

	With risk factor frequency (%)	Without risk factor frequency (%)	Total frequency (%)
Bad Habit	*(n = 400)*	*(n = 189)*	*(n = 589)*
None	388 (97.0)	185 (97.9)	573 (97.2)
Others	12 (3.0)	4 (2.1)	16 (2.8)
Mental disorder			
Normal	206 (100.0)	103 (100.0)	309 (100.0)
Domestic abuse			
No	284 (100.0)	134 (100.0)	418 (100.0)
Body Mass Index (BMI)	*(n = 414)*	*(n = 189)*	*(n = 603)*
Under weight	70 (16.9)	3 (1.6)	73 (12.1)
Normal	132 (31.9)	186 (98.4)	318 (52.7)
Over weight	133 (32.1)	0 (0.0)	133 (22.1)
Obese	79 (19.1)	0 (0.0)	79 (13.1)
BMI (kg/m^2) (Mean ± SD)	*25.36 ± 5.94*	*21.06 ± 1.46*	*24.00 ± 5.37*
Blood Pressure	*(n = 412)*	*(n = 190)*	*(n = 602)*
Normal	396 (96.1)	188 (98.9)	584 (97.0)
Abnormal	16 (3.9)	2 (1.1)	18 (3.0)
Systemic Examination	*(n = 397)*	*(n = 182)*	*(n = 579)*
Normal	391 (98.5)	180 (98.9)	571 (98.6)
Abnormal	6 (1.5)	2 (1.1)	8 (1.4)
Haemoglobin	*(n = 355)*	*(n = 166)*	*(n = 521)*
Normal	304 (85.6)	164 (98.8)	468 (89.8)
Abnormal	51 (14.4)	2 (1.2)	53 (10.2)

Discussion

Women from both the outpatient unit as well as the maternal child health unit in the health clinics were eligible for the pre-pregnancy screening. This was in keeping with recommendations from several papers that primary care providers take advantage of every health encounter to provide preconception care and risk reduction before and between conceptions—the time when it really can make a difference.[8,9]

In this review, the majority of the women with risk factors were Malays. This probably reflects the demographic patient attendance of the clinics involved. As expected, most of them were in the reproductive age group of 18–35 years old and were parous. Almost all were educated with half of them attaining tertiary level education.

The prevalence of women with at least one risk factor was found to be 68.8%. This high percentage correlates with another study that found 98% of all couples in a general population sample, has at least one risk factor.[10] However, one needs to keep in mind that there is selection bias in this review in regard to patient recruitment. Some of these women were recruited having known that they already have pre-existing risk factors. This could have contributed to the high prevalence of risk factors seen.

Women of child bearing age suffer from a variety of chronic conditions that could potentially contribute to the adverse pregnancy outcomes. From this review, 11.6% of the women screened had significant medical history, 8.7% had surgical history, 9.3% had obstetric history and 4.1% had gynaecologic history, which may affect the outcome of their future pregnancy. Women who were informed about these risks during pre-conception counselling had an opportunity to optimise their medical condition or take preventive measures before conceiving.[6,10]

A total of 3% women screened were found to engage in unhealthy lifestyle habits like smoking, alcohol and substance abuse. The American College of Obstetricians and Gynaecologists recommend that all health

encounters during a woman's reproductive years, particularly those that are a part of preconception care, should include counselling on appropriate health behaviors to optimise pregnancy outcomes and prevent maternal mortality.[1] Patients should be informed that prenatal alcohol and drug abuse is a preventable cause of birth defects including mental retardation and neuro-developmental defects and counselled pre-conceptionally about these effects.[11,12]

Obesity is defined as having a body mass index (BMI) of 30 kg/m^2 or greater.[13] The findings of 35.1% overweight and obese patients concur with another local study, which found 39.7% of primigravida with raised BMI.[14–16] Raised BMI is associated with significantly higher incidence of gestational diabetes mellitus, postpartum haemorrhage, gestational hypertension, impending eclampsia and caesarean rate, bigger babies and wound breakdown.[14–16] Opportunity should be provided for pre-conception counselling and education about the possible complications. Obese patients should be encouraged to undertake a weight reduction program before attempting pregnancy.[17] During pregnancy, weight reduction is not advisable but counselling concerning appropriate weight gain is advisable.[18]

Limitations

The secondary data may not represent all pre-pregnancy women who fulfill the criteria to have screening done as their attendance to the pre-pregnancy clinic was dependent on their willingness to accept screening and further referral. Some of the forms had illegible writing making it hard to decipher and others were incompletely filled up with missing information.

Conclusion

This study found that more than half of the women screened had at least one risk factor. The time has come to move forward and make pre-conception care an essential part of the primary and preventive care by strengthening our existing services and screening more women. The recommended mechanisms include the risk assessment (screening), health promotion (education and counselling) and intervention or referral. Primary care providers should incorporate these strategies into their practices to improve pre-conception health and further improve pregnancy outcomes.

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