



Knowledge about Prenatal Exercises among Medical Undergraduates in a Medical College in Nepal

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Abstract

Introduction: Exercise and regular physical activity during pregnancy are beneficial to maintain good maternal and fetal health, and to improve the ability to cope with labor. Pregnant women can follow physical activity guidelines with pregnancy-specific recommendations unless contraindicated. The benefits of prenatal exercises include reduction in cesarean rates, appropriate maternal and fetal weight gain, and managing gestational diabetes. This study aims to assess knowledge about prenatal exercises among medical undergraduates.

Methods: A cross-sectional study was carried out among 254 medical undergraduates after ensuring ethical clearance (ref no 077/078/48). Simple random sampling was done. Five-point Likert scale questionnaire was directly administered. Data entry and analysis were done with Statistical Package for the Social Sciences version 26 version. Descriptive analysis were carried out and point estimate at 95% Confidence Interval was calculated along with frequency and percentages for binary data.

Results: Out of 254 undergraduate medical students, 88.58% (225) participants disagreed that pregnant women should rest only while 85.43% (217) agreed that every pregnant women should adapt prenatal exercises. About 93.37% (237) agreed that prenatal exercises are safe. About 76.38% (194%) participants agreed that prenatal exercises make normal delivery easier but only 55.12% (140) agreed that prenatal exercises prevents the aches of having CS. Almost all participants (99.2%) wanted to learn more about prenatal exercises.

Conclusion: The knowledge of medical undergraduates on prenatal exercises was found inadequate when compared to reported literatures. However, the willingness of the participants to learn about it suggests programs and policies be formulated to incorporate prenatal exercises in medical curriculum and training.

Keywords: Exercises, medical, pregnancy, prenatal care, undergraduates

Introduction

Exercise and regular physical activity during pregnancy are not only beneficial in improving a pregnant woman's ability to cope with labor but also maintain her health then after. Regular activity while pregnant has shown to make it easier for a woman to achieve her desired physical fitness status after the baby is born.¹ Benefits of exercise in pregnancy include



reduction in cesarean section rates or instrumental vaginal deliveries, appropriate maternal and fetal weight gain, and in managing gestational diabetes.²⁻⁵ In the absence of medical contraindications or obstetric complications, pregnant women can follow pregnancy-specific physical activity guidelines and recommendations.⁶ Despite global awareness about the importance and health benefits of physical activity during pregnancy, several studies have reported a low prevalence of participation in physical activity among pregnant women in both developed and developing countries.⁷ Thus, this study aims to assess knowledge regarding prenatal exercises among medical undergraduates.

Methods

A cross-sectional study was carried out among undergraduate medical students of KIST Medical College and Teaching Hospital located in Lalitpur, Nepal. Study was conducted after taking institutional ethical approval (ref no 077/078/48) from ethical review board of KIST Medical college. Study was conducted for March 1, 2021 to May1, 2021. Students studying MBBS from the third year to the internship were included in the study. Simple randomized sampling was done based on the sampling frame. The sample size was calculated to be 210.

$$\begin{aligned} n &= Z^2 \times p \times (1-p) / e^2 \\ &= (1.96)^2 \times 0.5 \times 0.5 / (0.05)^2 \\ &= 384.16 \\ &= 385 \end{aligned}$$

Where,

n= required sample size

Z= 1.96 at 95% Confidence Interval (CI)

p= prevalence, 50%

e= margin of error, 5%

As our study population is small.

N (study population) =460

n=385

n/N =0.83 which is >0.05 , sample size is adjusted according to population.

$$\begin{aligned} \text{Adjusted sample size} &= n / (1+n/N) \\ &= 385 / (1+385/460) \\ &= 209.5 \\ &= 210 \end{aligned}$$

A total of 254 participants were enrolled. A list of all study populations was retrieved from the administration section

to generate a sampling frame in an excel sheet. Unique identification numbers was assigned to each participant and simple random sampling was done using a random function in Excel.

A semi-structured questionnaire was developed. The questionnaire had two parts: First part consisted of demographic information and questions that assessed knowledge in the form of multiple choice question answer patterns. The second part consisted of various questions that assessed the knowledge of participants. Twenty-six questions were put in the form of the five-point Likert scale. Five responses were "strongly disagree", "disagree", "neutral", "agree" and "strongly agree". Pretesting was done by undergraduate medical students belonging to the same years. The questionnaires were directly administered by investigators to the study participants.

Data entry and analysis were done with Statistical Package for the Social Sciences version 26 version. Descriptive analysis were carried out and point estimate at 95% Confidence Interval was calculated along with frequency and percentages for binary data.

Adequacy of knowledge was categorized with scoring more than 75%, 60-75% and less than 60% as having "Good", "Fair" and "Poor" knowledge, respectively.

Results

A total of 254 participants were enrolled in the study and the mean age of the participants was 23.4 +/- 1.57 years. Females constitute 57.9% of all the respondents. Among the respondent, 37% were final-year medical students followed by third-year medical students.

Out of 254 undergraduate medical students, 88.58% (225) participants disagreed that pregnant women should rest only while 85.43% (217) agreed that every pregnant women should adapt prenatal exercises. About 93.37% (237) agreed that prenatal exercises are safe. About 76.38% (194%) participants agreed that prenatal exercises make normal delivery easier but only 55.12% (140) agreed that prenatal exercises prevents the aches of having CS. About 83.07% (211) participants agreed that prenatal exercise help maintain maternal weight. Responses to other questions have been illustrated in Table 1.

Table 1: Knowledge of participants on a different aspect of prenatal exercises

SN	Questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	The pregnant women should rest only	30.71% (78)	57.87% (147)	3.54% (9)	7.09% (18)	0.79% (2)
2	Every pregnant woman should adapt prenatal exercises	0.79% (2)	1.57% (4)	12.20% (31)	62.60% (159)	22.83% (58)
3	Prenatal exercise is advantageous	0.79% (2)	0.79% (2)	5.12% (13)	59.06% (150)	34.25% (87)
4	Prenatal exercise done under expert guidance is safe	1.57% (4)	0.39% (1)	5.12% (13)	49.61% (126)	43.31% (110)
5	Prenatal exercise make normal delivery easier	0.39% (1)	1.97% (5)	21.26% (54)	50.55% (127)	26.38% (67)
6	Prenatal exercise prevents chances of having a C-section	1.18% (3)	8.27% (21)	37.80% (96)	28.74% (73)	24.01% (61)
7	Prenatal exercise prevents gestational diabetes	0.39% (1)	9.84% (25)	49.21% (125)	25.98% (66)	10.63% (27)
8	Prenatal exercise prevents pregnancy-induced hypertension	1.57% (4)	9.45% (24)	44.09% (112)	37.80% (96)	7.09% (18)
9	Prenatal exercises help maintain maternal weight	0.39% (1)	3.54% (9)	12.99% (33)	62.20% (158)	20.87% (53)
10	Prenatal exercises physically prepare women for delivery	0.39% (1)	1.57% (4)	9.84% (28)	64.57% (164)	22.44% (57)
11	Prenatal exercises mentally prepare women for delivery	0	2.76% (7)	14.96% (38)	61.02% (155)	21.26% (54)
12	Prenatal exercises speed up recovery in post-delivery period	0	4.72% (12)	27.95% (71)	53.15% (135)	14.17% (36)
13	Prenatal exercises prevent abnormal fetal position	1.18% (3)	18.11% (46)	42.91% (109)	30.31% (77)	7.48% (19)
14	Prenatal exercises promote good growth of the baby	0.39% (1)	8.27% (21)	39.76% (101)	41.73% (106)	9.84% (25)
15	Prenatal exercises increase the risk of abortion or preterm labor	17.72% (45)	60.24% (153)	17.72% (45)	4.33% (11)	0
16	Prenatal exercises increase the risk of results in vaginal bleeding (Antepartum hemorrhage)	10.24% (26)	51.97% (132)	28.75% (73)	8.27% (21)	0.79% (2)
17	Prenatal exercise directly harms baby	25.59% (65)	55.12% (140)	14.96% (38)	2.76% (7)	1.57% (4)
18	Prenatal exercise increases the risk of / results into uterine prolapse after birth	33.46% (85)	54.72% (139)	10.24% (26)	1.57% (4)	0
19	Lack of exercise/sedentary practices while pregnant leads to adverse outcomes during pregnancy	2.36% (6)	9.84% (25)	30.31% (77)	48.82% (124)	8.66% (22)
20	Lack of exercises/sedentary practices while pregnant leads to adverse outcomes during delivery	0.39% (1)	1.18% (3)	8.66% (22)	33.07% (84)	56.69% (144)
21	Lack of exercises/sedentary practices while pregnant leads to adverse outcomes during the post-delivery period	1.57% (4)	15.35% (39)	37.40% (95)	40.16% (102)	5.51% (14)
22	Pregnant women are aware of prenatal exercises	9.06% (23)	45.28% (115)	25.98% (66)	15.35% (39)	4.33% (11)
23	Nowadays Pregnant women practice prenatal exercise	12.60% (32)	54.72% (139)	25.59% (65)	6.30% (16)	0.79% (2)

Table 1 Continue...

24	Prenatal exercises promote adherence to routine exercise even after delivery	0.79% (2)	2.76% (7)	27.17% (69)	60.63% (154)	8.66% (22)
25	Hospitals/health centers teach prenatal about exercises to pregnant women	1.97% (5)	19.69% (50)	31.89% (81)	35.43% (90)	11.02% (280)
26	Hospitals/health centers should teach about prenatal exercises to pregnant women	0	1.57% (4)	4.33% (11)	38.98% (99)	55.12% (140)

Almost all, 99.2% (252) of the participants will recommend prenatal exercises to others and 99.2% (252) participants want to learn more about prenatal exercises.

Table 2: Demographic information of the participants

	Percentage (Frequency)
Gender	
Male	42.1% (107)
Female	57.9% (147)
Year in medical school	
Third year	29.5% (75)
Fourth Year	14.2% (36)
Fifth/Final Year	37% (94)
Internship	19.3% (49)

Social media/Advertisement (46.9%) were the most common source of information about prenatal exercises (Table 3).

Table 3. Sources of information about prenatal exercises among the participants.

	Percentage
Obstetricians	25.2% (64)
Books	26% (66)
Lectures/Conferences/Seminars	31.9% (81)
Social media/Advertisements	46.9% (119)
Other health workers	7.1% (18)

Discussion

With proper attention to risk stratification and surveillance, exercise is safe for the mother and fetus. Benefits of exercise in pregnancy include reduction in c-section rates, appropriate maternal and fetal weight gain, manages gestational diabetes, reduces instrumental vaginal deliveries, and maternal weight gain.^{2-4, 8}

A study showed a considerably higher percentage of excessive weight gain and prevalence of gestational diabetes in those women who did not exercise prenatally.^{9,10} The positive impact of prenatal exercises on gestational diabetes has been reflected by many studies. Overall, it reduces the chances of adverse outcomes both in mother and baby.^{2,5,11}

Furthermore, a study showed that preventing the factor that contributes to inadequate birth weight, doesn't increase the risk of small for gestational age infant, prevent excessive gestational weight gain, gestational diabetes, and potential complications due to obesity during pregnancy.¹² Many studies showed that prenatal exercise prevents excessive gestational weight gain.^{13,14} Thus, it can be established that exercise throughout pregnancy can reduce the risk of excessive maternal weight gain, promote good fetal weight gain and gestational diabetes. But according to our finding our respondents didn't have a good level of knowledge about the impact of prenatal exercise on these parameters.

The incidence of overweight and obesity in pregnancy has risen significantly in the last decades. As a result, overweight and obesity have been shown to increase the risk for some adverse obstetric outcomes⁹, including cardiovascular events and cerebrovascular events. These conditions can be prevented to some extent by introducing prenatal exercises among those women.^{11,12} Students in our study had good knowledge regarding the benefits of prenatal exercises to maintain maternal weight gain and to ensure adherence to exercises even post-partum.

Pregnancy-induced hypertension is a problem of concern during pregnancy which can result in adverse maternal and fetal outcomes, for which prenatal exercise can be a preventive tool^{14,15} as there is three-times greater risk of developing hypertension among those who do not exercise during pregnancy.¹⁴ The knowledge of our respondents on the impact of prenatal exercise on pregnancy-induced hypertension was found inadequate.

It is safe to say based on the current state of scientific research in this area, physical exercise is to be recommended during pregnancy so long as women are aware of potential dangers and contraindications¹¹ and that they follow recommended guidelines.¹² It is impressive that a study states supervised exercise performed over the second and third trimesters of pregnancy does not have a negative impact on the newborn's overall health.¹³ Respondents in our study also strongly agreed that prenatal exercises are safe for mother and baby as long as they are done under guidance and supervision. This shows that respondents have adequate knowledge of the safety profile of prenatal exercises.

A study showed that many women agreed that exercise during pregnancy had a good mental health impact on

them.⁴ They reported it made them mentally prepared for the process of childbirth.¹⁶ Our respondents also agreed on the same. This represents fine knowledge of respondents over the fact that for optimal physical health, especially during a state as dynamic as pregnancy, good mental health is intrinsic.

A study among medical practitioners showed that 98% believed that exercise during pregnancy was beneficial, and had knowledge on most of the expected benefits. 78% believed that providing exercise advice is an important part of prenatal care.¹⁷ Similar to the above study, our participants too have a fair knowledge of the benefits of prenatal exercises.

While compared to the pre-pregnancy period, the prevalence of physical activity among participants was lower throughout pregnancy. Half of the women interrupted practicing physical exercise and only less than half received exercise guidance during prenatal care meetings. Walking was the most commonly reported choice of exercise.¹⁸ A similar finding was recorded in another study.⁴ This indicates that promoting physical activity remains a priority in public health policy, and pregnant women should be encouraged to adopt an exercise routine or maintain an active lifestyle during pregnancy to avoid sedentary and obesity-associated risks. A study has shown that increasing obstetric provider training related to exercise during pregnancy may increase pregnant patient participation in exercise and ultimately lead to improved outcomes for mother and child.^{19, 20}

In 1985, the American College of Obstetrics and Gynecology (ACOG) published the first exercise-specific guidelines for pregnant women. Based on limited research in exercise and pregnancy, the guidelines were rather conservative. As evidence demonstrating the benefits of exercise during pregnancy continued to emerge, ACOG has been reaffirming these guidelines accordingly.⁶ But yet widespread adaptation of exercises in pregnancy or prenatal exercises is limited, especially in resource limited countries like Nepal.

Despite global awareness on the health benefits of physical activity during pregnancy, a low prevalence of participation in physical activity among pregnant women has been reported in both developed and developing countries. There is a gap in knowledge of evidence-based information regarding physical activity during pregnancy.³ Seemingly, pregnant women mostly from low-to-middle income countries are often predisposed to adverse pregnancy outcomes, possibly because of limited access to, and knowledge of partaking in safe physical activity during the time of pregnancy.⁷ Awareness and acceptance of prenatal exercises needs a bigger approach and policymaking. One very efficient way to achieve this goal is by teaching upcoming medical manpower like medical students about this topic. Our study shows medical students have very good knowledge when it comes to prenatal exercises and

their certain aspects but there still exists a full understating of the topic. When this gap in medical teaching will be addressed and revised in the curriculum, we will be one step closer in ensuring that women receive optimal guidance from medical professionals on prenatal exercises. As medical students are the future of medicine and will be involved directly or indirectly in obstetric cases, adequate knowledge and apt attitude about prenatal exercise bear much significance. Thus, there is a need for promotion of prenatal exercises and one effective way is by educating and training medical students, who are the cornerstone to changing medical practices.

Conclusion

The knowledge on prenatal exercises of the medical undergraduates is inadequate. The students are willing to explore different dimensions of prenatal exercise which is very often the issue of practical importance in their medical as well as personal life. Thus programs and policies should be formulated to incorporate the topic of prenatal exercises in medical curriculum and medical practice.

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