Knowledge and Awareness of Antenatal Physiotherapy among physiotherapy students in Mewar University, India: A cross sectional survey based study

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ABSTRACT

Background: Antenatal care plays a crucial role during pregnancy required for smoother delivery of the baby and in improving neonatal outcomes and also in preventing maternal complications. It mainly focuses on regaining fitness back after delivery. Knowledge and awareness regarding the same is very important among physiotherapy students as they play a key role in returning the female back to their pre-pregnant state. Objective: To check the knowledge and awareness of antenatal physiotherapy among physiotherapy students. Methodology: A e-survey based study was conducted at Mewar University, Rajasthan, India in 2025 using pre-validated self- administered questionnaire where a total of 80 participants were included in this study who were pursuing physiotherapy as a profession between the age group of 20-27 year old to examine the level of knowledge and awareness among themselves. Participants who've done some course such as diploma on antenatal physiotherapy were excluded from the study. Results: About 55% (median= 13) participants were aware and had good knowledge regarding antenatal physiotherapy. Most of the students were well aware of the type of exercises recommended during the trimester but knowledge regarding diastasis recti was lacking. Conclusion: There was good knowledge and awareness regarding antenatal physiotherapy in maximum physiotherapy students

Keyword : - *Antenatal, Physiotherapy, Knowledge, Awareness, Rehabilitation.*

1. Introduction.

Antenatal care arose in Edinburgh during the 20th century. In earlier days since 1920s, a unit of midwifes in hospitals and common attentive specialists used to inspect womens urine for protein at regular intervals whereas some palpated abdomen. Mostly womens used to refer a midwife/medical practitioner once before labour. Problem arouse in 1920s, when there was a rise in maternal complications due to which ministry of health woke up and realised that antenatal care plays an important role during pregnancy to ensure smoother delivery of the baby. In order to make people awake a national system of antenatal clinics with a suitable arrangement of appointments and measures was started through Janet Campbell. Her ideas became clinical obstetric screening service in 1930s.[1]

In 1948, Obstetric physiotherapist association was formed which included the members of association of chartered physiotherapist in womens health (ACPWH) as well as a chartered society of physiotherapy (CSP). Their aim was to encourage and provide means by which physiotherapists develop a better understanding of the speciality and improve their specialist therapeutic skills.[2]

Antenatal care forms the strength of safer motherhood by playing a fundamental role during the 9 months of fetal development.[3] It ensures a normal pregnancy with delivery of a healthy baby (fetal weight should be 2.5kg or more) from healthy mother (no maternal complications) which starts immediately after the time of conception.[4]

Physiotherapy plays a major role in management of womens physical as well as psychological changes during pregnancy such as increased uterine blood flow, enlargement of uterus, variation of COG, increased body weight and many more.[5,6]

Balance and Body stability is been affected due to physical changes during pregnancy which causes discomfort and pain. The centre of gravity shifts upwards and anteriorly due to increased lumbar lordosis when the fetus reaches 40% of its expected weight. Greater ligament laxity in pelvis is provided by relaxin on peripheral joints.[7] Alterations such as increased step width, decreased step length along with slower walking velocity with addition of longer double support time is noticed during the progressing trimesters. Although there is increase in mean pelvic and ankle separation widths as well as anterior tilt of pelvis during pregnancy was marked. This significant variations of joints resulted in a so called "duck", "penguin", or "waddle" pregnant gait. Earlier researches have shown stiffness of longitudinal foot arch decreases during 1st trimester along with increased midfoot plantar pressure and foot pronation.[8]

Antenatal classes are required for "preparation of parenthood".[1] Few visits to antenatal clinics may be helpful time for women and her partner to learn about pregnancy which is executed by many exceptional videos and books which are usually presented in the antenatal waiting area.[1] Midwives, physiotherapists and other health care professionals work together in order to provide antenatal education in form of classes and group activity.[2] During an antenatal visit, there must be checking of Blood pressure, urine, weight, oedema palpations, fetal heart rate, blood test, haemoglobin test and few more of the pregnant female.[9] However, Immunization against tetanus is usually been provided during pregnancy to protect the mother and neonate as well.[4] As per WHO guidelines, "a fundamental part of antenatal care is physiotherapy which is required to avoid musculoskeletal discomfort and group therapy designed for aerobic as well as psychological wellness".[10] It evades several maternal complications for example sacroiliac pelvic girdle pain, obesity, muscle weakness, stress incontinence, nerve compression, fatigue, pregnancy induced hypertension, premature labour, joint laxity.[6] Also helps in promoting healthy lifestyle, Postural and ergonomic device, Teaching relaxation and breathing techniques and maintains optimal physical fitness of the mother.[9] Although collaboration with midwives is also essential.[2] Earlier many studies have shown womens should initiate or continue exercises during her prenatal period of pregnancy which is essential for regaining physical fitness back after delivery and avoiding postnatal complications as well.[3,5,6] Antenatal care reduces the risk of maternal and neonatal mortality.[4] It is believed that good antenatal care and efficient obstetric care are complementary to each other for successful outcome.[4] Mostly aerobic exercises such as walking, swimming are prescribed to the pregnant women which enhances heart rate as well as circulatory system along with few resistive and flexibility exercises for just 15-30 mins not more than that with proper warm up and cool down phase of about 5-10mins for minimum 3 times a week which is continued to 4-5 weeks.[2,3,4,10] Although kegals exercise has also been added in order to tighten pelvic floor muscles to avoid stress urinary incontinence.[3] Abdominal muscle strengthening along with pelvic tilt exercises is done to prevent Diastasis recti.[3] Although yoga and pilates is also recommended during pregnancy.[2] Rehabilitation exercises needs to be functional, as many pregnant females are unable to attend a physiotherapy department due to to family commitments.[2] Other than exercises Antenatal physiotherapy also includes use of manual therapy along with side flexion manoeuvres to relieve pain along the anterior surface of lower ribs (due to ascending uterine pressure) and lateral chest pain, TENS for pain management because its easy to apply, non invasive and have no known side effects for mother/baby as well as Acupuncture is also effective in relieving antenatal lumbopelvic pain.[2]

Antenatal physiotherapy is beneficial for pregnant female as it is responsible for the maintenance of cardiovascular fitness, healthy weight gain, body awareness, posture coordination and balance.[2] Improves circulation, endurance, and stamina on one hand whereas on other hand helps in prevention of gestational hypertension.[2] It also enhances feelings of emotional and social well-being.[2] Awareness and promotion of antenatal health care exercises are required to improve the neonatal outcomes and for safer maternity in the expecting mother as well as physical therapist.[5,10]

2. Material and Methods

2.1 Materials

A e-survey questionnaire containing questions related to antenatal physiotherapy; Internet

2.2 Method

STUDY SETTING

The study was conducted in the Department of Physiotherapy, Mewar University, Rajasthan, India.

STUDY PARTICIPANTS

The study was executed on the students pursuing physiotherapy as their profession who have knowledge regarding Antenatal physiotherapy.

SAMPLE SIZE

N= 80, The sample size of 80 participants was determined based on a prior study conducted by Bolarinde S. et al (2018), which served as a reference point for this research investigation.[11]

SAMPLING TECHNIQUE

Convenience sampling

SELECTION CRITERIA

i. **INCLUSION CRITERIA:** Both male as well as female**;** age group between 20-27 years**;** physiotherapy Students of MMIPR (BPT 4th year, intern and masters)**;** willing to participate in the study.

ii. **EXCLUSION CRITERIA:** Students of other profession; If he/she is not an internet user**;** participants who have done some course/diploma on Antenatal Physiotherapy.

Procedure

A questionnaire was meticulously developed through a comprehensive literature review of existing research, utilizing Google Forms to create a concise 20-item instrument. The questionnaire underwent rigorous expert validation, with five specialists in the field providing critical feedback that informed subsequent revisions. Following validation, the refined questionnaire was disseminated to physiotherapy students via various social media platforms, including WhatsApp, Facebook, and Gmail, accompanied by an informed consent form. Participants were afforded the flexibility to complete the survey at their convenience, with data subsequently imported into SPSS for statistical analysis.

DATA COLLECTION

Data collection was facilitated through Google Forms, and the online responses received were subsequently subjected to analysis, yielding valuable insights into the research phenomenon.

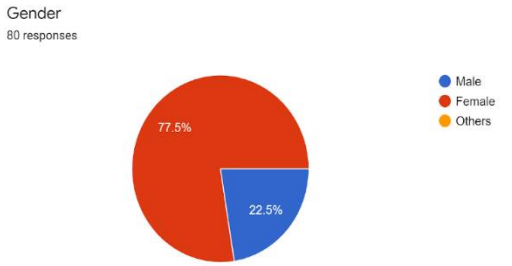
DATA ANALYSIS

It was done by SPSS Statistics Version 26 and normality was determined by Kolmogorov Smirnov test.

3. Result

This study enrolled a total of 80 students, with an age range of 20-27 years, comprising 18 males and 62 females, and a mean age of 22.39 years (SD = 1.673). To assess the normality of the age and gender distributions, a Kolmogorov-Smirnov test was conducted, revealing a statistically significant deviation from normality ($p < 0.05$), thereby indicating a non-homogeneous population.

Table 3.1: Tests of Normality			
	Kolmogorov-Smirnov[a]		
	Statistic	df	Sig.(p value)
Age	.229	80	.000
Gender	.479	80	.000



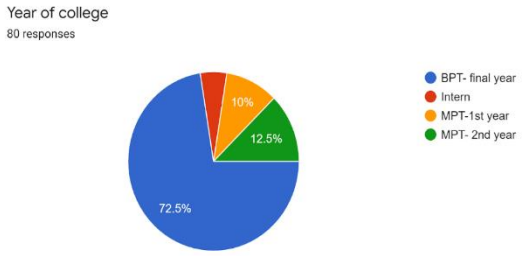


Fig 1:- Gender distribution (in percentage) **Fig 2:-**Year distribution (in percentage)

Table 3.2: Demographic Details	N	Mean ±SD
Age	80	22.39±1.673
Gender	Males=18; Females= 62	1.77±.420
Year of college	BPT 4th year = 58, Intern = 4, MPT 1st year=8, MPT 2nd year =10.	1.63±1.095

Table 3.3: Participant responses

S.NO.	QUESTIONS REGARDING ANTENATAL PHYSIOTHERAPY	OPTIONS	RESULT
1.	Antenatal Physiotherapy is beneficial for _____	a) fitness b) body awareness c) healthy weight gain **d) all of the above***	8 (10%) 1 (1.3%) 1 (1.3%) 70 (87.5%)

2.	How much time is recommended to perform a session of Antenatal Exercise?	a) 10-20 mins **b) 15-30 mins*** c) 5-15 mins d) 20-25 mins	21 (26.3%) 47 (58.8%) 3 (3.8%) 9 (11.3%)
3.	Antenatal exercise helps to reduce_____	a) birth weight b) stress urinary incontinence c) pelvic floor dysfunction **d) all of the above***	4 (5%) 6 (7.5%) 6 (7.5%) 64 (80%)
4.	Which of the following relieves Antenatal Lumbopelvic pain?	a) Acupuncture b) TENS **c) Both a and b*** d) None of the above	3 (3.8%) 34 (42.5%) 35 (43.8%) 8 (10%)
5.	Which of the following is helpful during labour?	a) Stretching exercises b) TENS **c) Massage therapy*** d) None of the above	11 (13.8%) 24 (30%) 35 (43.8%) 10 (12.5%)
6.	Which of the following helps in strengthening of pelvic floor muscles?	a) Core strengthening b) Relaxation techniques **c) Kegels exercise*** d) Breathing exercises	5 (6.3%) 5 (6.3%) 69 (86.3%) 1 (1.3%)
7.	Which exercise prevents diastasis recti?	a) Kegels exercise **b) Abdominal muscle strengthening*** c) Massage therapy d) All of the above	12 (15%) 35 (43.8%) 4 (5%) 29 (36.3%)

8.	How many days per week is antenatal physiotherapy recommended?	a) 3 days b) 4 days **c) 5 days*** d) 6 days	14 (17.5%) 19 (23.8%) 41 (51.2%) 6 (7.5%)
9.	Antenatal physiotherapy is essential for_____	a) Avoiding maternal complications b) Regaining Fitness back after delivery **c) Both a and b*** d) None of the above	8 (10%) 8 (10%) 59 (73.8%) 5 (6.3%)
10.	Common discomforts during pregnancy helps in_____	a) Abdominal pain b) dizziness c) shortness of breath **d) all of the above***	15 (18.8%) 7 (8.8%) 2 (2.5%) 56 (70%)
11.	Exercising during pregnancy helps in_____	a) Relieving backache b) Maintaining physical health **c) Both a and b*** d) None of the above	3 (3.8%) 5 (6.3%) 70 (87.5%) 2 (2.5%)
12.	What is recommended for reducing edema in Antenatal period?	a) Elevation b) Ankle foot pumps **c) Both a and b*** d) None of the above	8 (10%) 11 (13.8%) 60 (75%) 1 (1.3%)
13.	Which exercise regime is recommended during 2nd trimester?	a) Flexibility exercises b) Hip opening exercises c) Core stability **d) Both a and c***	8 (10%) 14 (17.5%) 18 (22.5%0 40 (50%)

14.	While asleep, which side is suitable during pregnancy?	a) Right Side **b) Left Side*** c) Both a and b d) None of the above	6 (7.5%) 23 (28.7%) 40 (50%) 11 (13.8%)
15.	Exercise regime for backpain during antenatal period include_____	a) Backward press b) Backward Stretch c) Forward bend **d) All of the above*** Others:- Tens , Depending upon the condition, No stretch is advisable, Massage therapy.	14 (18.2%) 10(13%) 7 (9.1%) 42 (54.5%) 1 (1.3%) 1(1.3%) 1(1.3%) 1 (1.3%)
16.	Which of the following is safe to perform during antenatal period?	a) Brisk walking b) Yoga c) Swimming **d) All of the above***	9 (11.4%) 12 (15.2%) 6 (7.6%) 52(65.8%)
17.	Low impact aerobics during antenatal period is used for_____	a) Improving circulations **b) Maintaining fitness levels*** c) More rapid postnatal recovery d) All of the above	10 (13%) 9 (11.7%) 4 (5.2%) 54 (70.1%)
18.	A pregnant female is advised to_____	a) Avoid heavy weight lifting b) Avoid standing on one leg c) Remain active within the limits of pain **d) All of the above***	10 (12.8%) 5 (6.4%) 8 (10.3%) 55 (70.5%)
19.	Which exercise regime is recommended during the 3rd trimester?	a) Relaxation techniques b) Core stability c) Hip opening exercises	10 (12.7%) 9 (11.4%) 10 (12.7%)

		d) Both a and c*	50 (63.3%)
20.	Contraindications for antenatal physiotherapy include_____	a) Placenta previa b) Preterm rupture **c) Both a and b*** d) None of the above	6 (7.5%) 6 (7.5%) 65 (81.3%) 3 (3.8%)

Table 3.4: YEAR	MEDIAN OF MARKS OBTAINED FROM EACH
BPT- 4th YEAR	13
INTERN	14
MPT-1ST YEAR	11.5
MPT-2ND YEAR	14

Table 3.5: Median of score obtained

	Age	Score
N	80	80
Median	22.00	13.00

Median score of participants according to their year of college is BPT-4th year is 13; Intern is 14: MPT-1st year is 11.5 and MPT-2nd year is 14. The above mentioned table shows that most of the physiotherapy students in masters 2nd year and intern have quiet good and equal knowledge while bachelor final year students were also knowledgeable and aware regarding antenatal physiotherapy. However, it was noted that there was a slight lack of knowledge among masters 1st year regarding the same.

The median score of all the participants came out to be 13 (n=80) where the total score was 20. Since, the median obtained is 13, it is to be considered that participants scoring 13 and above have good knowledge regarding Antenatal physiotherapy whereas participants scoring below 13 have less knowledge as compared to others. It was found that out of 80 participants 44 were knowledgeable and aware i.e, 55% whereas the remaining 36 i.e, 45% were not having proper knowledge and awareness regarding Antenatal physiotherapy.

4. Discussion

This study was conducted to assess the knowledge and awareness among physiotherapy students about various aspects of antenatal physiotherapy. A total of 80 students pursuing physiotherapy as profession participated in the study. Following observations were found:-

Benefits and Essential components of Antenatal Physiotherapy

About 87.5% participants were aware that antenatal physiotherapy is beneficial in fitness, body awareness, as well as healthy weight gain and remaining 12.5% were unaware of the same, As well as it seems that 73.8% participants do have knowledge regarding the essential components of antenatal physiotherapy i.e, avoiding maternal complications as well as regaining fitness back after delivery whereas 26.2% were still unaware of the same. This findings shows that most of the physiotherapy students do have a basic knowledge and awareness regarding the subject.

Time and days/week recommended to perform a session of Antenatal Physiotherapy

More than half i.e, 58.8% responded 15-30mins is the time limit to perform a session of antenatal exercises whereas 51.2% recommended to continue antenatal exercises for 5 days a week which suggests that mostly physiotherapy students knew regarding the time period to perform antenatal exercises.

Strengthens Pelvic floor muscle and prevents Diastasis recti

86.3% do have knowledge that kegels exercise plays a crucial role in strengthening of pelvic floor muscle in order to prevent stress urinary incontinence, whereas only 43.8% have knowledge regarding prevention of diastasis recti i.e, done by abdominal muscle strengthening. Similar observation was noted in a previous article by Chiarello M C.et al (2005), Effects of exercise program on diastasis recti abdominis in pregnant female which showed that existence and size of DRA

among exercising group was marked less as compared to the non- exercising group.[12] There was an another study done by Mason L.et al(2010) on role of antenatal pelvic floor muscle exercise in order to prevent stress incontinence after delivery which showed a positive impact on women's health.[13]

Relieves Antenatal Lumbopelvic pain

Only 43.8% knows that both acupuncture as well as TENS helps in relieving antenatal lumbopelvic pain and majority 56.2% didn't know regarding the same. This result shows that there's a lack of knowledge among physiotherapy students regarding the use of acupuncture and TENS.

Massage Therapy is helpful during labour

Only 43.8% have knowledge regarding this as massage therapy is required for pain management during labour that provides comfort and helps the mother to relax whereas rest 56.2% were not aware of the same. The result of this study coincides with the results of a previous article by Chang Mei Y.et al(2002) i.e, Effects of massage on pain as well as anxiety during labour which proved that massage therapy can reduce pain as well as anxiety if applied during the course of labour along with a positive impact on the quality associated with female birth experiences.[14]

Common Discomforts which leads to discontinuance of Antenatal exercises

A majority of 70% participants were aware of the discomforts such as abdominal pain, dizziness, shortness of breath which are common during pregnancy and can lead to discontinuance of antenatal exercises while just 30% were unaware of the same.

Safe to perform during Antenatal period and use of low impact aerobics

About 65.8% participants consider brisk walking, yoga as well as swimming safe to perform during pregnancy whereas only 11.7% knew that low impact aerobics focuses mainly on maintaining fitness levels as a result it has been found that most of the physiotherapy students have lack of knowledge regarding the proper use of low impact aerobics during antenatal period.

Advices provided to the pregnant female during antenatal period including the sleeping position during this period of time.

A majority of 70.5% participants agreed to advice avoiding heavy weight lifting, avoiding standing on one leg as well as remain active within the limits. But very low i.e, 28.7% of participants had knowledge regarding the sleeping position during this period of time as while asleep, left side is the most suitable because it improves the amount of time spent in this position as well as sleeping on left side may be feasible. This result has been supported by a similar previous article by Warland J, Dorrian J.et al(2014), Accuracy of Self-Reported Sleep Position in Late Pregnancy which proves that sleeping on left side during pregnancy is more feasible and avoids poor maternal outcomes as well. [15]

Use of Antenatal physiotherapy for reducing edema

About 75% recommended both elevation as well as ankle foot pumps would help in reducing edema during antenatal period. This showed that physiotherapy students do have a good knowledge regarding pitting edema during antenatal period as well as ankle exercises for reducing the same. The result of this study is supported by a similar observation seen in a previous article by Watanabe Y.et al(2017), Treatment of leg as well as foot edema in female which proved that leg elevation, foot massage, etc plays a crucial role in the reduction of edema during pregnant as well as non-pregnant state.[16]

Exercise regime for relieving backpain during antenatal period

54.5% participants agreed to provide all backward press, backward stretch as well as forward stretch. But only 5% participants provided their own response which includes massage therapy, TENS, no stretch is advisable and depending upon the condition. This findings showed that more than half of the physiotherapy students are aware of exercises being provided for backache during pregnancy. This result is being supported by previous article by Ross S.et al i.e, Non pharmacologic Remedies for Back Pain During Pregnancy, which proved that the two main causes of back pain in pregnant women focuses on weakened musculature and distorted posture which are included in primary targets of most of the treatments.[17]

Exercise regime for 2nd and 3rd trimester

It was noted that 50% participants recommended to provide both flexibility exercises as well as core stability during the 2nd trimester. Similarly 50% agreed to provide both relaxation techniques as well as hip opening exercises during the 3rd trimester. This result showed that only half of the physiotherapy students were aware and do had knowledge regarding the exercise regime during 2nd and 3rd trimester while half were still unaware of the same.

Contraindications for antenatal physiotherapy

A majority of 81.3% participants were knowledgeable regarding the contraindications, mostly all physiotherapy students selected both placenta previa and preterm rupture which shows that very less no. of students were unaware of the same.

5. Conclusion

The result of this study showed that maximum of the physiotherapy students were aware and had knowledge regarding Antenatal Physiotherapy.

6. Future Work

The findings of this study have far-reaching implications and can be applied to various fields, including:
Midwifery: The study's results can be used to assess the knowledge and awareness of midwives, enabling targeted training and education to improve maternal care.
Healthcare attendants: Similarly, the study's outcomes can be utilized to evaluate the knowledge and awareness of healthcare attendants, facilitating the development of effective training programs.
Future research directions: The study's methodology can be replicated across different regions in India, incorporating diverse strata such as nursing students, healthcare professionals, and rural/urban populations. This would provide a more comprehensive understanding of the knowledge and awareness gaps, ultimately informing the development of tailored interventions to address these gaps. By expanding the scope of this study, researchers can gain a deeper understanding of the knowledge and awareness levels among different healthcare professionals and populations, Identify specific areas requiring targeted interventions, Develop effective training programs and educational materials to address knowledge gaps, Inform policy decisions and healthcare practices to improve maternal care and outcomes.

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