

Effectiveness of Nurse-Directed Exercises on Pelvic Girdle Pain and Functional Status among Antenatal Mothers in Tertiary Care Hospital- A Quantitative Research

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ABSTRACT

Introduction: Pelvic Girdle Pain (PGP) is a common musculoskeletal disorder that leads to significant disabilities in day-to-day activities during pregnancy. PGP increases with advancing pregnancy.

Aim: To evaluate the effectiveness of nurse directed exercises on PGP and functional status among antenatal mothers.

Materials and Methods: A quantitative research approach (two group pre-test post-test) was adopted for the present study. By simple random sampling technique, with permuted block method, 108 antenatal mothers who attended the antenatal Out Patient Department (OPD) in Mahatma Gandhi Medical College and Research Institute, Pillaiyarkuppam, Puducherry, India, at 27 weeks of gestation were selected. The study has been carried out from 30th March 2022 to 14th May 2022. The numerical pain rating scale and pelvic girdle questionnaire was used. Group-I received nurse directed exercises such as

diaphragmatic breathing, Kegel's exercise, squatting exercise, child pose exercise etc., Group-II received routine care such as diet counselling, personal cleanliness, care of breast, immunisation, rest and sleep, dental care, and avoidance of travelling. Post-test was done at 31 weeks of gestation. Descriptive statistics such as frequency, percentage, mean, and standard deviation and inferential statistics like Independent t-test, Spearman correlation coefficient, Kruskal-Wallis test was used.

Results: Nurse directed exercises were more effective method in reducing the PGP level (4.26 vs 3.02) and improving the functional status (61.059 Vs 55.680) among antenatal mothers with PGP. There was a significant association between the PGP with nature of work (p-value-0.001) and previous history of abdominal or pelvic surgery (p-value 0.0102).

Conclusion: Nurse directed exercises were more effective in alleviating the PGP level and helps in improving the normal daily activities of antenatal mothers with PGP.

Keywords: Pain level, Pregnancy, Routine care, Stabilising exercises

INTRODUCTION

Massive physical changes that occur during pregnancy cause a variety of illnesses, including nausea, vomiting, varicose veins, leg cramps and PGP [1,2]. PGP happens when the woman relaxes too much, enabling the pelvic bones to glide up and down when walking, causing pain in the pubic area as well as backache [3-5].

PGP is not just experienced during a specific pregnancy trimester but is also felt throughout pregnancy and postpartum; however, the onset is usually at 14-30 weeks of gestation [6,7]. About 42% of the women had reported problems with low back pain earlier, and 34% of women had reported that the family history of PGP in pregnancy [8]. PGP results in greater disability than lumbar pain and is more prevalent in pregnant women [9,10]. PGP causes significant physical disability and has important psychosocial implications, including extended leave from work during pregnancy, poorer quality of life (as a result of being unable to carry out normal roles, affecting their ability to care for their children) and predisposition to chronic pain syndrome [11-13]. Therefore, PGP can be treated with various modalities like precise stabilising exercises to ease pain and build up supporting muscles, acupuncture, hydrotherapy, Transcutaneous Electrical Nerve Stimulation (TENS), and life style changes [14]. Nurses are regularly doing antenatal visits and they are able to teach the exercises and do the follow-up activities. Very few interventional studies have been reported so far in India. Evidence-based practice is essential in promoting quality of care [2]. Hence, the aim of the present study was to evaluate the effectiveness of nurse directed exercises on PGP and functional status among antenatal mothers.

MATERIALS AND METHODS

The present true experimental research (two group pre-test post-test) design study was conducted at Antenatal OPD in Mahatma Gandhi Medical College and Research Institute, Pillaiyarkuppam, Puducherry, India, for the duration of seven weeks from 30th March 2022 to 14th May 2022. The approval was obtained from the Institutional Human Ethics Committee (KGNC/IHEC/2021/037).

Inclusion criteria: Antenatal mothers both primigravida and multigravida with the gestational age of 27 weeks with PGP (minimum pain score-3) and gave informed consent were included in the study.

Exclusion criteria: Antenatal mothers with 27 weeks of gestation with high-risk pregnancy, having mental impairment, conceived by assisted reproductive technique and those who received any pharmacological treatment for PGP were excluded from the study.

Sample size: According to the reference of previous study conducted by Gupta SS with the confidence of 95% and the available preliminary data, the sample size was considered as 108 antenatal mothers [15]. Pilot study was conducted with 10% of the sample size. After conducting the pilot study, the data were analysed. No further changes were made in the tool after pilot study. Antenatal mothers meeting the selection criteria who reported to the Antenatal Outpatient Department (OPD) within the study duration were included in the study by simple random sampling technique with permuted block method in which 54 antenatal mothers were assigned in experimental group and 54 antenatal mothers were assigned in control group. Pre-interventions scores were collected for both the groups. PGP level was assessed by

using numerical pain rating scale [16]. Functional status was assessed by pelvic girdle questionnaire. It helps to assess the activity limitations and symptoms in mothers with PGP. Items should be scored on a 4 point response scale which ranges from 'Not at all' to 'To a large extent' [17,18].

Maximum score 75

% Disability=(total score/75)×100

Score interpretation

<40%: Mild limited functional status

40-75%: Moderate limited functional status

≥75%: Severe limited functional status

Group-I (Experimental group) nurse directed exercises such as diaphragmatic breathing, kegel's exercise, squatting exercise, seated piriformis stretch, bound angle pose, forward pose exercise, child pose exercise was demonstrated and had to be practiced from 27 to 30 weeks of gestation. Antenatal women had practiced these exercises for 5-10 minutes (morning and evening) every day in their home. Daily exercise monitoring chart had given the antenatal mothers to mark daily performed exercise and video call observation was made.

Group-II (Control group) routine care advice was given like avoid standing/sitting for long time, try to avoid carrying heavy objects, avoid legs crossed position, intake of calcium rich foods, using pillow between knees and ankles and so on.

Post-intervention score was conducted by using numerical pain rating scale and pelvic girdle questionnaire during 31 weeks of gestation.

STATISTICAL ANALYSIS

Descriptive statistics such as frequency, percentage, mean, standard deviation and inferential statistics like independent t-test, Spearman correlation coefficient, Kruskal-Wallis test was used. All statistical analysis was performed using Statistical Package for the Social Sciences (SPSS) version 16.0.

RESULTS

Majority i.e., 18 (33.3%) belongs to 26-28 years, and two (3.7%) belonged to 20-22 years in experimental group and 18 (33.3%) belonged to 23-25 years, and one (1.9%) belongs to 20-22 years in control group [Table/Fig-1].

S. No.	Demographic variables	Group-I Experimental group (54)		Group-II Control group (54)		Mean	
		n	%	n	%	N	%
1.	Age of mother (years)						
	a) 20-22	02	3.7%	01	1.9%	03	2.7%
	b) 23-25	17	31.5%	18	33.3%	35	32.5%
	c) 26-28	18	33.3%	18	33.3%	36	33.3%
	d) 29 and above	17	31.5%	17	31.5%	34	31.5%
2.	Body Mass Index (BMI) (kg/m²)						
	a) Less than 18.5	05	9%	05	9%	10	9.3%
	b) 18.5-24.9	34	63%	35	65%	69	63.9%
	c) 25-29.9	09	17%	10	19%	19	17.5%
	d) 30 and above	06	11%	04	7%	10	9.3%
3.	Obstetrical score						
	a) Primi	35	65%	34	63%	69	63.9%
	b) Multi	19	35%	20	37%	39	36.1%

[Table/Fig-1]: Distribution of demographic variables.

[Table/Fig-2] shows that in Group-I out of 54, the highest number of mothers 34 (63%) had moderate pain in pre-test and 34 (63%) had mild pain in post-test. In Group-II, 34 (63%) had moderate pain in pre-test and 24 (44.4%) had moderate pain in post-test.

S. No.	Level of pain	Group-I Experimental group		Group-II Control group	
		Pre-test	Post-test	Pre-test	Post-test
1.	Mild pain (1-3)	17 (31.5)	34 (63)	16 (29.6)	23 (42.6)
2.	Moderate pain (4-6)	34 (63)	20 (37)	34 (63)	24 (44.4)
3.	Severe pain (7-9)	03 (5.6)	0	04 (7.4)	07 (13)

[Table/Fig-2]: Distribution of level of Pelvic Girdle Pain (PGP) among antenatal mothers during pre-test and post-test in Group-I and II.

[Table/Fig-3] shows that in Group-I highest number of mothers 47 (87%) had moderate limited function in pre-test and 45 (83.3%) had moderate limited function in post-test. In Group-II, 47 (87%) had moderate limited function in pre-test and 47 (87%) had moderate limited function in post-test.

S. No.	Functional status	Group-I Experimental group n (%)		Group-II Control group n (%)	
		Pre-test	Post-test	Pre-test	Post-test
1.	Mild limited function (<40%)	03 (5.6)	07 (13)	06 (11.1)	05 (9.3)
2.	Moderate limited function (40%-75%)	47 (87)	45 (83.3)	47 (87)	47 (87)
3.	Severe limited function (≥75%)	04 (7.4)	02 (3.7)	01 (1.9)	02 (3.7)

[Table/Fig-3]: Distribution of functional status among antenatal mothers with Pelvic Girdle Pain (PGP) during pre-test and post-test in Group-I and II.

[Table/Fig-4] shows that comparison of pre-test and post-test level of PGP among antenatal mothers with PGP. The obtained paired t-test value was 17.823 in Group-I and 0.314 in Group-II and independent t-test value was 0.455 in Group-I and 9.682 in Group-II. It was highly significant with p<0.05 level.

Pelvic Girdle Pain (PGP) level	Group-I		Group-II		Independent t-test	p-value
	Mean	Standard deviation	Mean	Standard deviation		
Pre-test	4.26	1.443	4.31	1.552	0.455	0.502
Post-test	3.02	1.296	4.28	1.742	9.682	0.002
Paired t-test	17.823		0.314			
p-value	0.001		0.755			

[Table/Fig-4]: Comparison of pre-test and post-test on level of Pelvic Girdle Pain (PGP) among antenatal mothers in Group-I and II.

[Table/Fig-5] shows the comparison of pre-test and post-test functional status score among antenatal mothers with PGP. The obtained paired t-test value was 6.24 in Group-I and 0.028 in Group-II and Independent t-test value was 0.074 in Group-I and 0.235 in Group-II. It was highly statistically significant with p<0.05 level.

Functional status	Group-I		Group-II		Independent t-test	p-value
	Mean	Standard deviation	Mean	Standard deviation		
Pre-test	61.059	10.7187	60.739	11.3432	0.074	0.786
Post-test	55.68	13.6721	60.722	11.6402	0.235	0.629
Paired t-test	6.24		0.028			
p-value	0.001		0.978			

[Table/Fig-5]: Comparison of pre-test and post-test functional status score among antenatal mothers in Group-I and II.

[Table/Fig-6] shows that there was no correlation between PGP and functional status among antenatal mothers with PGP. There was a significant association found between PGP with the selected demographic variables like nature of work and previous history of abdominal/pelvic surgery among antenatal mothers with p-value <0.05 level. There was no significant association found between pre-test level of functional status with the selected demographic variables [Table/Fig-7].

Spearman correlation coefficient				
Test value		Level of Pelvic Girdle Pain (PGP)	Functional status	p-value
		Pre-test	Pre-test	
Level of Pelvic Girdle Pain (PGP)	Pre-test	1	0.033	0.736
Functional status	Pre-test	0.033	1	

[Table/Fig-6]: Correlation between the level of Pelvic Girdle Pain (PGP) and functional status before administering of nurse directed exercises among antenatal mothers.

was significantly lower at day 56 than at day 0 and lower than the control group at day 56 at p-value <0.05 and shown that sitting pelvic tilt exercise during the third trimester in primigravida could decrease back pain intensity [21]. Similarly the study findings of Sukanti S et al., had shown that yoga was effective in reducing PGP during the pregnancy [22].

The study had the following implications in the field of nursing practice, nursing education, nursing administration and nursing research. Nurse directed exercises should be adopted in hospitals and maternity centre. It is also safe. Continuing nursing

Demographic variables	No. of mother	Level of Pelvic Girdle Pain (PGP)			Kruskal wallis/chi-square test	p-value
		Mean	Median	Standard deviation		
Age (years)	20-22	03	3.67	3	0.7597	0.8591
	23-25	35	4.31	4		
	26-28	36	4.39	4		
	29 and above	34	4.21	4		
Occupation	House wife	32	3.78	4	7.2267	0.2043
	Coolie	13	4.31	4		
	Self-employee	29	4.34	4		
	Government employee	20	4.55	4		
	Private employee	12	5.08	5		
	Any other	02	4.00	4		
Nature of work	Sedentary	18	2.67	2	45.0789	0.001
	Moderate	61	4.31	4		
	Heavy	29	5.62	6		
Body Mass Index (BMI)	Less than 18.5	10	4.00	4	2.8403	0.4169
	18.5-24.9	69	4.32	4		
	25-29.9	19	4.63	5		
	30 and above	10	3.7	3		
Previous history of abdominal/pelvic surgery	Yes	05	2.6	2	6.6079	0.0102
	No	103	4.37	4		

[Table/Fig-7]: Association between the Pelvic Girdle Pain (PGP) with their selected demographic variables during pre-test in Group-I and II.

DISCUSSION

The PGP during pregnancy is a common complaint for women all over the world irrespective of the socio-economic conditions of the countries. PGP has been frequently dismissed as trivial and inevitable, although it significantly affects quality of life and causes considerable disabilities in daily activities such as walking, lifting, climbing stairs, lying flat on the back, turning in bed, housekeeping and working [1]. In a study from North West Ethiopia, shows that the prevalence of PGP was more among the antenatal women and it was majorly associated with previous history of PGP, previous history of back pain [19]. Robinson PS et al., had assessed the impact of pregnancy and PGP on health related quality of life. It shows that women with PGP had lower health-related quality of life (HRQOL) than women without, and the most affected women scored lowest [20].

Nurse directed exercises was more effective method in reducing the PGP (4.26 Vs 3.02) and improving the functional status (61.059 Vs 55.680) among antenatal mother with PGP compared with control group PGP (4.31 Vs 4.28) and improving the functional status (60.739 Vs 60.722), respectively. The above findings were consistent with the study findings by Sathya J and Santhi M modified pelvic girdle questionnaire and patient specific functional scale scores of the experimental groups were statistically lower than the mean score of the control group [2]. The difference between the score averages of the group was found to be significant. PGP and specific activities mean scores of the experimental groups were found to be higher than the control group. Similarly the research findings of Wacharapreechanont TE had revealed that the mean Visual Analog Scale (VAS) of back pain in the experimental group

education programs can be organised for the community health nurse, which helps them to practice nurse directed exercises for antenatal mothers with PGP. Administrators can formulate policies and procedures regarding the implementation of nurse directed exercises for antenatal mothers with PGP and thereby improving the activities of daily living of women.

Limitation(s)

Mothers felt little discomfort during the procedure and convincing the mothers for the procedure was difficult. These apprehensions could have introduced some bias in the study.

CONCLUSION(S)

In the current study, nurse directed exercises was found to be significant in reducing the PGP level and improving the functional status among antenatal mothers with PGP. Thus, the study results can be used as an informative illustration for nursing students who can effectively practice it and reduce the disabilities of PGP in the post-natal period among antenatal mother with PGP.

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