Original Article

Prevalence Of Frozen Shoulder In Post-Menopausal Women: A Cross-Sectional Study

Rita Sharma*[1], Dr Sandhya Kumari[1], Dr Rajesh Thakur[2], Dr Rajni Ranjan[2]

[1]Ph.D Scholar, Department of Physiotherapy, Sharda School of Allied Health Science, Sharda University, Greater Noida, Uttar Pradesh, India
[1]Clinical Physiotherapist, ITS College of Health and Wellness Sciences, Greater Noida, Uttar Pradesh, India
[2]Associate Professor, Department of Biochemistry, School of Medical Science and Research, Sharda University, Greater Noida, Uttar Pradesh, India

[2] Professor, Department of Orthopaedic, School of Medical Science and Research, Sharda University, Greater Noida, Uttar Pradesh, India

Corresponding Author*: Rita Sharma, Department of Physiotherapy, Ph.D. Scholar, School of Allied Health Science, Sharda University, Greater Noida, U.P. Pincode-201310, Email id-Ritaphysio05@gmail.com

DOI: 10.47750/pnr.2022.13.03.182

Abstract

BACKGROUND- When a woman's menstrual cycle comes to a stop and she is no longer able to conceive, she enters the climacteric or menopause stage. However, there are a few exceptions to this general tendency, such as women who reach menopause at an earlier age. This study conducted to check the Prevalence of frozen shoulder in post-menopausal women.

METHODOLOGY- Shoulder Pain and Disability Index (SPADI), the Perceived Stress Scale, and The Epworth Sleepiness Scale were all included in the design of the form that was created. Additionally, the 36-Item Short Form Survey (SF-36), the Hamilton Anxiety Rating Scale (HAM-A), and the Menopause Rating Scale (MRS) were also incorporated into the form. Participants were given the opportunity to fill out a form, which started with a discussion of the inclusion and exclusion criteria, and continued on from there. Participants in the study were given a patient information paper after they had finished a study sample. This document included a more in-depth explanation of the research's aims, objectives, and methodology than they had previously received. Following the distribution of a patient information booklet, participants in the study provided their informed consent. The participants were requested to fill out the questionnaires, and the goniometer was used to measure the range of motion in their shoulders. After an agreed-upon amount of time had passed since all of the data had been gathered, the statistical study was carried out.

RESULTS- The results of the survey indicate that the majority of women had menopause 9.89 years ago, as their average age is 55.50, their average weight is 64.71, and their average height is 5.23, with a BMI score of 11.82. The affected sides of the participants with frozen shoulder are 67 on the right, 27 on the left, and 6 on both sides. The pain ratio of the participants with frozen shoulder is 7.6 on the VAS scale. Shoulder flexion, extension, abduction, and addition on the affected side are 124.022, 2.808, 85.651, and 35.202 respectively. 81.51 is the SHOULDER PAIN AND DISABILITY INDEX score. The scores for MRS, PSS, HAMA, and EPWORTH are 12.87, 12.18, 17.26, and 10.31, respectively. There is positive correction which can be seen between the MRS scores and Duration of Menopause which mean that there is a significant effect of Menopause in frozen shoulder.

CONCLUSION- The findings of the study lead the researchers to the conclusion that there is a substantial association between menopause and frozen shoulder in women. In addition, there was a reduction in stress and an improvement in quality of life as a result of menopause and frozen shoulder. Higher impacts may be shown in older participants, despite the fact that the subjects experience less stress as they become older.

KEYWORDS- Frozen shoulder, adhesive capsulitis, Pain, Spadi, menopausal, pain, disability

INTRODUCTION

When a woman's menstrual cycle comes to a stop and she is no longer able to conceive, she enters the climacteric or menopause stage. However, there are a few exceptions to this general tendency, such as women who reach

menopause at an earlier age. Menstruation may stop for up to a year during the menopause for many women. Ovulation hormone production may be reduced as well. This means that women who have had their uterus removed but maintained their ovaries are still in their reproductive years even if their hormone levels begin to fall. Premature symptoms are more common in women who have had their uterus surgically removed (Shuster et al., 2010).

Depending on how near a woman is to menopause, her menstrual periods may be longer or shorter, or their volume may be lighter or heavier. They might last anywhere from a few seconds to up to ten minutes, and they're usually accompanied by trembling hands and a heated flushed face. Symptoms of hot flashes might go undetected for up to five years. Miscarriage or pregnancy may lead to a variety of symptoms, including vaginal dryness, insomnia, and mood swings. An individual woman's symptoms may differ greatly from another women. The increased risk of heart disease associated with menopause is not due to menopause itself, but rather to an increase in the average age of the population. Endometriosis and painful menstrual cycles may be alleviated for some people following menopause (Pincus, 1957).

Menopause is a normal phase of the life cycle of most women. As early as childhood, smokers may begin to see the negative impacts of their habit. Another alternative is ovarian cancer treatment that involves surgical or chemotherapeutic removal of the ovaries. During menopause, the synthesis of oestrogen and progesterone in the uterus drops, resulting in a reduction in ovulation. A hormone test in the blood or urine may help confirm menopause, although it is not always necessary. A woman's menstrual cycle begins with menarche, which is the polar opposite of menopause(Hill, 1996).

No further care is required in most circumstances. Medicine, on the other hand, may be able to alleviate certain symptoms. Smoking, caffeine, and alcohol are often discouraged as treatments for heat flashes. Use a fan and sleep in a cool area if possible. PPD may be treated with a variety of drugs, including clonidine, gabapentin, and menopausal hormone treatment (MHT). Sleep issues may be alleviated by regular exercise. Previously, MHT was given to everyone, but today only individuals with the most severe symptoms are allowed to take it. In order to prove the efficacy of complementary and alternative medicine, rigorous scientific research is still pending. Phytoestrogens may exist, according to preliminary research(Society, 1999).

Adhesive capsulitis (AC) disease, also known as Frozen Shoulder, is characterised by a gradual but total loss of joint mobility in the glenohumeral (GH) region, as well as concomitant symptoms such as pain and stiffness(Robinson et al., 2012). AC disease is characterised by a gradual but total loss of joint mobility in the GH region. Because this condition promotes inflammation, the capsule around the GH joint tends to become fibrotic, which reduces the joint's range of motion (typically external rotation)(T. D. Bunker & Esler, 1995). Those who are just beginning to experience symptoms of frozen shoulder may have trouble differentiating it from other shoulder problems(Mengiardi et al., 2004). The condition known as frozen shoulder may be brought on by a number of factors, some of which are hereditary while others are not. On the basis of arthroscopy and pathological results, it has been hypothesised for a long time that there is inflammation in the axillary fold. As a direct result of this, synovial fibrosis and the accompanying inflammation are always accompanied by stiffness and adhesions(Milgrom et al., 2008). The following are some of the potential triggers that might result in frozen shoulder: There are no recognised factors that contribute to the development of primary illness (it comes on for no attributable reason) The origin of secondary causes might be traced back to a known aetiology, a predisposing condition, or even a surgical procedure(Wu et al., 2021). A later case of frozen shoulder might have been brought on by any number of circumstances. Examples of this include after surgery, after having a stroke, and after being injured. After suffering an injury, a joint's normal range of motion may become restricted, and the joint may eventually become rigid. According to the Centers for Disease Control and Prevention, women account for seventy percent of all cases of frozen shoulder(Kelley et al., 2009).

As the patient's contractures become more severe, there is a corresponding alteration in the volume and accessibility of the GH joint's surrounding tissue(Cohen et al., 2020). There is a possibility that the volume of space around the GH joint will decrease by anywhere between 15 and 35 cubic centimetres (cm3) Some specialists believe that a Dupuytren's contracture may produce the similar changes in the hand as the capsules(Lubiecki, 1975). There is a possibility that GH ligament contracture will result from rotator interval thickening and fibrosis

at the top of the interval. The strength of the inferior glenohumeral ligament is directly correlated to the severity of the problem. The condition becomes more severe as the ligament becomes stronger(T. Bunker, 2009). The inferior glenohumeral ligament acts as a "hammock" at the bottom of the joint thanks to its anterior and posterior bands. The range of motion of the GH joint accessory might be restricted if this ligament were to become constricted(Yehia & Elmeligie, 2022a). A dislocation of 2 to 3 millimetres is recommended for GH joints in order to achieve optimal performance. Stability, by itself, is not capable of maintaining its own state of stability. On the other hand, the insertions of the rotator cuff muscular capsule into the tendons of the rotator cuff muscles are(Yehia & Elmeligie, 2022b). It's possible that the dynamic activity of the rotator cuff has an effect on the capsule tension. The ligaments and muscles that extend into the capsule contribute to the stability of the GH joint, which is reliant on this. It's possible that inflammation is linked to neovascularization, which might change how we understand the term "capsulitis."(Hospital, 1997)

METHODOLOGY AND PROCEDURE

A Cross sectional study was conducted on 100 patients in Sharda Hospital, Greater Noida. Based on inclusion criteria-age above 45 years, Menopausal, diagnosed with frozen shoulder, able to perform activates and excluded criteria was Woman still having periods were selected for the study.
Procedure:The Shoulder Pain and Disability Index (SPADI), the Perceived Stress Scale, and The Epworth Sleepiness Scale were all included in the design of the form that was created. Additionally, the 36-Item Short Form Survey (SF-36), the Hamilton Anxiety Rating Scale (HAM-A), and the Menopause Rating Scale (MRS) were also incorporated into the form. Participants were given the opportunity to fill out a form, which started with a discussion of the inclusion and exclusion criteria, and continued on from there. Participants in the study were given a patient information paper after they had finished a study sample. This document included a more in-depth explanation of the research's aims, objectives, and methodology than they had previously received. Following the distribution of a patient information booklet, participants in the study provided their informed consent. The participants were requested to fill out the questionnaires, and the goniometer was used to measure the range of motion in their shoulders. After an agreed-upon amount of time had passed since all of the data had been gathered, the statistical study was carried out.

RESULT

DEMOGHRPHIC DETAILS				
	AGE	WEIGHT	HIGHT	BMI
Mean	55.50	64.71	5.234	11.8240
N	100	100	100	100
Std. Deviation	6.654	8.434	.2771	1.71446

TABLE NO 1- SHOWS THE DEMOGHRPHIC DETAILS OF SUBJECTS AS AGE, WEIGHT, HIGHT, BMI

DURATION OF M PAUSE		
Mean (YEARS)	N	Std. Deviation
9.89	100	6.943

TABLE NO 2 – SHOW THE DURATION OF MENOPAUSE PAUSE OF THE SUBJECTS

AFFECTED SIDE					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Both	6	6.0	6.0	6.0
	Left	27	27.0	27.0	33.0
	Right	67	67.0	67.0	100.0
	Total	100	100.0	100.0	

TABLE NO 3- SHOWS THE AFFECTED SIDE OF FROZEN SHOULDER IN THE SUBJECTS

PAIN IN VAS		
Mean	N	Std. Deviation
7.92	100	1.041

TABLE NO 4- SHOWS THE PAIN IN THE SUBJECTS DUE TO FROZEN SHOULDER

SHOULDER RANGE OF MOTION OF AFFECTED SIDE				
	FLEXION	EXTENSION	ABDUCTION	ADDUCTION
Mean	124.022	42.808	85.651	35.202
N	100	100	100	100
Std. Deviation	39.3904	13.3203	31.8643	25.3493

TABLE NO 5 -SHOWS THE SHOULDER RANGE OF MOTION OF THE SUBJECTS AFFECTED BY THE FROZEN SHOULDER

SHOULDER PAIN AND DISABILITY INDEX (SPADI)		
Mean	N	Std. Deviation
81.5106	100	19.67799

TABLE NO 6 – SHOWS THE SHOULDER PAIN AND DISABILITY INDEX OF THE SUBJCTES EFFCTED BY THE FROZEN SHOULDER.

	MRS	PSS	HAMA	EPWORTH
Mean	12.87	12.18	17.26	10.31
N	100	100	100	100
Std. Deviation	6.876	7.319	8.896	4.701

TABLE NO 7 – SHOWS THE SCORES OF MENOPAUSE RATING SCALE (MRS), PERCEIVED STRESS SCALE(PSS), HAMILTON ANXIETY RATING SCALE (HAM-A), THE EPWORTH SLEEPINESS SCALE(EPWORTH)

SF 36 (PERCENTAGE)									
	Physical functioning	Role limitations due to physical health	Role limitations due to emotional problems	Energy/ fatigue	Emotional well-being	Social functioning	Pain	General health	Health change
Mean	56.95	14.25	14.660	51.00	55.92	42.000	43.650	44.60	26.50
N	100	100	100	100	100	100	100	100	100
Std. D	25.095	24.684	21.3552	12.851	9.765	22.8577	23.3426	7.443	33.299

TABLE NO 8 – SHOWS THE SCORES PERCENTAGE OF SF 36 (PERCENTAGE)

Correlations

		AGE	WEIGHT	HIGHT	BMI	DURATION OF M PAUSE	TOTAL SPADI	MRS	PSS	HAM-A	EPWORTH
AGE	Pearson Correlation	1	.017	-.097	.078	.709**	.185	.060	-.324**	-.044	.070
	Sig. (2-tailed)		.869	.337	.442	<.001	.066	.551	.001	.667	.491
	N	100	100	100	100	100	100	100	100	100	100
WEIGHT	Pearson Correlation	.017	1	.309**	.659**	.086	-.036	.197*	.229*	.297**	.174
	Sig. (2-tailed)	.869		.002	<.001	.396	.721	.050	.022	.003	.083
	N	100	100	100	100	100	100	100	100	100	100
HIGHT	Pearson Correlation	-.097	.309**	1	-.491**	.092	-.139	.101	.212*	.183	-.241*
	Sig. (2-tailed)	.337	.002		<.001	.364	.167	.318	.034	.069	.016
	N	100	100	100	100	100	100	100	100	100	100
BMI	Pearson Correlation	.078	.659**	-.491**	1	.005	.040	.067	.030	.079	.369**
	Sig. (2-tailed)	.442	<.001	<.001		.962	.696	.507	.771	.434	<.001
	N	100	100	100	100	100	100	100	100	100	100
DURATION OF M PAUSE	Pearson Correlation	.709**	.086	.092	.005	1	.278**	.028	-.328**	-.159	-.006
	Sig. (2-tailed)	<.001	.396	.364	.962		.005	.782	<.001	.115	.950
	N	100	100	100	100	100	100	100	100	100	100
TOTAL SPADI	Pearson Correlation	.185	-.036	-.139	.040	.278**	1	.117	-.179	.112	.314**
	Sig. (2-tailed)	.066	.721	.167	.696	.005		.245	.075	.266	.001
	N	100	100	100	100	100	100	100	100	100	100
MRS	Pearson Correlation	.060	.197*	.101	.067	.028	.117	1	.331**	.463**	.074
	Sig. (2-tailed)	.551	.050	.318	.507	.782	.245		<.001	<.001	.466
	N	100	100	100	100	100	100	100	100	100	100
PSS	Pearson Correlation	-.324**	.229*	.212*	.030	-.328**	-.179	.331**	1	.466**	.328**
	Sig. (2-tailed)	.001	.022	.034	.771	<.001	.075	<.001		<.001	<.001
	N	100	100	100	100	100	100	100	100	100	100
HAM-A	Pearson Correlation	-.044	.297**	.183	.079	-.159	.112	.463**	.466**	1	.161
	Sig. (2-tailed)	.667	.003	.069	.434	.115	.266	<.001	<.001		.110
	N	100	100	100	100	100	100	100	100	100	100
EPWORTH	Pearson Correlation	.070	.174	-.241*	.369**	-.006	.314**	.074	.328**	.161	1
	Sig. (2-tailed)	.491	.083	.016	<.001	.950	.001	.466	<.001	.110	
	N	100	100	100	100	100	100	100	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

TABLE NO 9 – SHOWS THE CORRECTION BETWEEN DIFFERENT VARIABLE OF THE SUBJECTS

The results of the survey indicate that the majority of women had menopause 9.89 years ago, as their average age is 55.50, their average weight is 64.71, and their average height is 5.23, with a BMI score of 11.82. The affected sides of the participants with frozen shoulder are 67 on the right, 27 on the left, and 6 on both sides. The pain ratio of the participants with frozen shoulder is 7.6 on the VAS scale. Shoulder flexion, extension, abduction, and addition on the affected side are 124.022, 2.808, 85.651, and 35.202 respectively. 81.51 is the SHOULDER PAIN AND DISABILITY INDEX score. The scores for MRS, PSS, HAMA, and EPWORTH are 12.87, 12.18, 17.26, and 10.31, respectively. There is positive correction which can be seen between the MRS scores and Duration of Menopause which mean that there is a significant effect of Menopause in frozen shoulder.

DISCUSSION

The results of the survey indicate that the vast majority of women had menopause around 9.89 years ago. The fact that the respondents' average age is 55.50, their average weight is 64.71, and their average height is 5.23 results in a BMI score of 11.82, which lends credence to this assertion. There were 67 individuals whose shoulders were affected on the right side, 27 people whose shoulders were affected on the left side, and 6 people whose shoulders were damaged on both sides. On a measure known as the visual analogue scale (VAS), the patients who suffered from frozen shoulder had a pain ratio of 7.6. On the affected side, the flexion of the shoulder, extension of the shoulder, abduction, and addition are all measured at 124.022, 2.808, 85.651, and 35.202 respectively. As a consequence of this, the total score on the SHOULDER PAIN AND DISABILITY INDEX is 81.51. Scores of 12.87, 12.18, 17.26, and 10.31 were obtained after taking the MRS, PSS, and HAMA tests, respectively. The EPWORTH score was 10.31. Since there is a positive adjustment that can be detected between the MRS scores and the Duration of Menopause, one may deduce that menopause has a significant impact on frozen shoulder. It was found that MRS, PSS, and EPWORTH all showed positive corrections linked with the participants' ages when the relationship was examined for all of the other factors as well. The adjustment is made such that it falls somewhere between the range of +1 to -1, which corresponds to the positive and negative responses of the variables. Roshi et al 2017 - A tertiary care centre was used as the setting for this research, which included an examination of the menopause. The average age of the population was 58 years. According to the findings of the research, the average age of menopause was 48 years. Menopause often happens 16 years after a woman has gone through menopause in a normal case. The great majority of individuals lived in rural areas during that time period. The menopause occurred naturally for the majority of women. It was noted that the most common symptoms were aches in the joints, muscles, and other connective tissues, and flushing was the second most common symptom. A significant number of respondents to the survey also mentioned having trouble sleeping or cardiac problems as additional somatic symptoms. Anxiety, wrath, and despair were the most common types of feelings that people experienced. Dryness of the vagina, sexual difficulties, and urine issues were the most common types of urogenital complaints among women. The research of Jacintha Veigas et al. 2022 - Throughout the course of the investigation, both a cross-sectional design and an exploratory technique were used in various capacities. The location could not have been more straightforward to discover. The method of sampling was quite straightforward and consisted of a random selection. In order to determine the educational requirements of the student body, an online survey and a demographic profile were carried out. There were a lot of people that participated who were in their late 50s and early 60s, and they made up 28.1% of the total. Seventy-five percent of the women who participated in the study had already experienced menopause by the time they were in their forties or fifties. There were nuclear power plants in the homes of three quarters of the participants (77.5 percent). In light of the findings, it is imperative that postmenopausal women get education on topics like the modification of lifestyle habits and the upkeep of sexual health. They need to have a better understanding of how their physical and mental health are intertwined.

Future Research

Future studies can be done on the larger sample size with experimental protocols for effects on Frozen Shoulder in Menopausal women.

Relevance to clinical practice

Frozen shoulder is an inflammatory condition that causes pain and stiffness in the shoulder joint. Menopause is the stage of life that occurs after the menstrual cycle ends. A treatment protocol can be developed for the treatment of the Frozen shoulder of Menopausal women.

CONCLUSION

As the menopause begins, there is a larger possibility of frozen shoulder in the participants who are female. The findings of the study lead the researchers to the conclusion that there is a substantial association between menopause and frozen shoulder in women. In addition, there was a reduction in stress and an improvement in quality of life as a result of menopause and frozen shoulder. Higher impacts may be shown in older participants, despite the fact that the subjects experience less stress as they become older.

REFERENCES

1. Bunker, T. (2009). Time for a New Name for Frozen Shoulder—Contracture of the Shoulder. Shoulder and Elbow, 1(1), 4–9. https://doi.org/10.1111/j.1758-5740.2009.00007.x
2. Bunker, T. D., & Esler, C. N. A. (1995). Frozen shoulder and lipids. Journal of Bone and Joint Surgery - Series B, 77(5), 684–686. https://doi.org/10.1302/0301-620x.77b5.7559689
3. Cohen, C., Tortato, S., Silva, O. B. S., Leal, M. F., Ejnisman, B., & Faloppa, F. (2020). Association between frozen shoulder and thyroid diseases: Strengthening the evidences. Revista Brasileira de Ortopedia, 55(4), 483–489. https://doi.org/10.1055/s-0039-3402476
4. Hill, K. (1996). The demography of menopause. Maturitas, 23(2), 113–127. https://doi.org/10.1016/0378-5122(95)00968-X
5. Hospital, E. O. (1997). Frozen shoulder: unravelling the enigma T D Bunker MCh(Orth) FRCS Consultant Orthopaedic Surgeon. In Ann R Coll Surg Engl (Vol. 79).
6. Kelley, M. J., Mcclure, P. W., & Leggin, B. G. (2009). Frozen shoulder: evidence and a proposed model guiding rehabilitation. In Journal of Orthopaedic and Sports Physical Therapy (Vol. 39, Issue 2, pp. 135–148). Movement Science Media. https://doi.org/10.2519/jospt.2009.2916
7. Lubiecki. (1975). Editorial Frozen shoulder : past , present , and future. Orthopaedic Surgery, 2–4. https://doi.org/10.1177/230949900701500101
8. Mengiardi, B., Pfirrmann, C. W. A., Gerber, C., Hodler, J., & Zanetti, M. (2004). Frozen shoulder: MR arthrographic findings. Radiology, 233(2), 486–492. https://doi.org/10.1148/radiol.2332031219
9. Milgrom, C., Novack, V., Weil, Y., Jaber, S., Radeva-Petrova, D. R., & Finestone, A. (2008). Risk factors for idiopathic frozen shoulder. Israel Medical Association Journal, 10(5), 361–364.
10. Pincus, G. (1957). Recent Progress in Hormone Research. Vol. XII. In AIBS Bulletin (Vol. 7, Issue 1). https://doi.org/10.2307/1292058
11. Robinson, C. M., Seah, K. T. M., Chee, Y. H., Hindle, P., & Murray, I. R. (2012). Frozen shoulder. Journal of Bone and Joint Surgery - Series B, 94 B(1), 1–9. https://doi.org/10.1302/0301-620X.94B1.27093
12. Shuster, L. T., Rhodes, D. J., Gostout, B. S., Grossardt, B. R., & Rocca, W. A. (2010). Premature menopause or early menopause: Long-term health consequences. Maturitas, 65(2), 161–166. https://doi.org/10.1016/j.maturitas.2009.08.003
13. Society, I. M. (1999). International Menopause Society menopause-related terminology defi n. Climacteric, 2, 284–286.
14. Wu, C. J., Ting, H., Lin, C. C., Chen, Y. C., Chao, M. C., & Lee, S. da. (2021). Efficacy of joint mobilization apparatus in treating frozen shoulder. Applied Sciences (Switzerland), 11(9). https://doi.org/10.3390/app11094184
15. Yehia, R. M., & Elmeligie, M. M. (2022a). Effectiveness of extracorporeal shockwave therapy for frozen shoulder in perimenopausal diabetic women. Biomedical Human Kinetics, 14(1), 109–116. https://doi.org/10.2478/bhk-2022-0014
16. Yehia, R. M., & Elmeligie, M. M. (2022b). Effectiveness of extracorporeal shockwave therapy for frozen shoulder in perimenopausal diabetic women. Biomedical Human Kinetics, 14(1), 109–116. https://doi.org/10.2478/bhk-2022-0014