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Frequency of Shoulder Asymmetry Among Adult Females Carrying Bag on any Shoulder in Islamabad

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A B S T R A C T

Background: Individuals use shoulder bags to carry personal things of day to day life. The bag is one of the few types of manual load carriage that are used by females. Shoulder bag weight and its poor carrying pattern cause abnormal changes that result in poor posture.

Objective: To determine the frequency of shoulder asymmetry among adult females carrying a shoulder bag.

Methodology: A cross sectional survey of 202 females aged between 19-35 years, selected using non probability convenient sampling from Islamabad. The duration of study was January 2018 to June 2018 and data were collected from Shifa Tameer-e-Milat University Islamabad, Pakistan. The data was collected through one self-structured and two standards [Quick DASH (Disability of Arm, Shoulder and Hand) and NPRS (Numeric pain rating scale)] questionnaire. Postural Grid was used to assess the asymmetry of shoulders. Data analysis was done through SPSS 21.

Results: The mean age of participants was 26.80±4.90 years. The results showed that the majority 75.2% participants have shoulder asymmetry on Postural Grid. NPRS showed that the majority 76.7% of the participants did not have any pain and 76.2% of participants don't have any disability.

Conclusion: This study concluded that the majority of the female population carrying bags on any shoulder have shoulder asymmetry as compared to the other shoulder but this asymmetry is not causing any pain or disability in the majority of the females.

Introduction

In primary care and specialty orthopedic clinic the most common musculoskeletal condition is shoulder pain, it ranges between 18% to 31%.[1] The word asymmetry has the denotation, "alteration in normal symmetry".[2] Heavy Bags can cause postural asymmetry as they put more weight on one shoulder and are used by the adult population for carrying different things they need in everyday life.[3] Mostly high school or university students use bags that are extended to one shoulder. Lifting handbag on one shoulder, lack of proper conveying method and put weight irregularly on one side of the body causes muscle ache and problems of spine.[4] Long haul increment in weakness can make issues with a weight carrying and is the immediate reason for asymmetry and illnesses.[5] In typical walking, while carrying bag, COP (center of pressure) changes in an undeviating manner, as recommended, even if the carriage is in any direction.6 Glenohumeral joint connects the upper limb to the lower limb. It provides movement in all planes and axis as compared to all other joints.[7] A study showed that 77.1% of sophomores complained regarding trunk, back, shoulder, and neck symptoms. The writer proclaimed that many factors were responsible for these deteriorating effects one of the basic factors was the use of handbags.

Trunk and shoulder symmetry should be assessed in sophomores using hand bags to measure any deviation from normal symmetry.[7] Multiple studies have been done to understand the problems which occurred due to improper way of carrying bags and also studied standard way of carrying bag but all of them focused of primary school children. In this study we are intended to observe the frequency of shoulder asymmetry in adult females who usually carry heavy bags on one shoulder.[8]

Methodology

The aim of this survey was to determine the frequency and related constituents of shoulder asymmetry between adult females lifting shoulder bag on any shoulder. It was a cross sectional survey. Non probability convenience sampling was done. A sample of 202 females was selected after calculating through an online software. We included females, aged between 19-35 years and those who had been carrying bag for more than 2 hours per day (on and off) for at least one year. The data was collected through a brief Interview based on self-structured and standard questionnaire. Quick DASH (Disability of Arm, Shoulder, and Hand) questioner was used to determine the effect of shoulder asymmetry on daily life activities. NPRS (Numeric pain rating scale) was used to assess the intensity of pain caused by carrying a bag on the shoulder. Postural Grid was used to assess the asymmetry of the shoulder. The collected data was analyzed on SPSS-21 software.

Results

The average age of partakers in our study was 26.80±4.90 years. Other demographics are showing in Table I.

Table I: Shows frequencies of marital status and occupations of participants. (n=202)

	Status	Frequency(%age)
Marital status	Unmarried	107(53)
	Married	95(47)
Occupation	Student	100(49.5)
	Teacher	75(37.1)
	Housewife	27(13.4)

The results showed that majority 152(75.2%) females had shoulder asymmetry on Postural Grid in which majority 186(92.1%) were carrying a bag on right shoulder. Majority 130(64.4%) females showed a higher shoulder on which they usually carry bag. 148(73.3%) of the females were feeling discomfort in shoulder joint and 46(23.3%) were feeling mild level of pain. Mostly 154(76.2%) females showed no disability of shoulder, arm or hand on Quick DASH questioner. Details are given in Table II.

Table II: Shows frequencies of associated factors of shoulder asymmetry and other details of results.

		Frequency (%age)
Shoulder asymmetry on postural grid	Yes (Left)	12(5.9)
	Yes (Right)	140(69.3)
	No	50(24.8)
Bag carrying shoulder	Right	186(92.1)
	Left	16(7.9)
Shoulder carrying bag bit higher than other	Yes	130(64.4)
	No	72(35.6)
Discomfort while carrying bag	Yes	148(73.3)
	No	54(26.7)
NPRS	No Pain	155(76.7)
	Mild (1-3)	47(23.3)
	Moderate (4-7)	nil
	Severe (8-10)	nil
DASH	No disability	154(76.2)
	Mild	146(22.8)
	Moderate	2(1)
	Severe	nil

Discussion

This study showed that many of the adult female who lifted handbags whether on right or left shoulder had shoulder asymmetry a few of them who held handbags for more than six hours perceived aching pain. According to Phonpichit C et al there are certain analogous determinants which make women more susceptible to uneven shoulder they are, lifting bags that are ten times more than body weight, inappropriate way of carrying bags and the type of hand bags which do not disturb normal alignment of body and promotes a good posture.[9]

On postural grid it was noticed that majority of the females have a high shoulder on which they were carrying bag i.e. right shoulder higher than the left. In a

kinematics analysis done by Kim et al. it is observed that carrying a bag of single strap changes the posture and angle of the shoulder, as well as spine, is disturbed at most and when both straps are used it increases the angle of both shoulder and spine when compared to no bag pack is used. As when only one side is utilized for the load placement the body automatically lean towards the other side or raise the arms to maintain the dynamic balance also to cater the center line with the base support. [3] Another research manifested that extended use and uneven way of lifting loads do not affect the normal vertebral alignment in a longitudinal plane. Yet, upper trapezius and erector spinae muscles were uneven when compared on both sides ($p < 0.05$). Aching pain was felt in the right upper traps and finger flexor while lifting shoulder bags. The research manifested that ideal weight of lifting bags shoulder bags should not be more than ten percent of body weight lifting heavy bags for a prolonged period will lead to musculoskeletal related issues.[9]

The focus of this study was to highlight that females carrying bags on any shoulder are unintentionally getting themselves towards postural deformities as prolonged duration of lifting shoulder bags in an uneven pattern could lead to consequential biomechanical changes followed by back pain, scoliosis and muscular imbalance.[10]

Conclusion

It is concluded that a large number of females carrying bags on any shoulder have shoulder asymmetry as compared to the other shoulder. It is recommended that further studies should focus on the major consequences of this asymmetry as it can lead to postural or spinal deformities.

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