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ORIGINAL ARTICLE

Prevalence of Postural Biomechanical Awareness among Male and Female Paramedical Staff During Patient Transfer-A Comparative Study

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ABSTRACT

Objective: This comparative study was conducted to investigate the knowledge and practice of correct postural biomechanical awareness among male and female paramedical staff during patient transfer.

Methods: Data was collected from Surgical, Orthopedic, Emergency, Operation Theater, Gynae & Labor wards of 20 different hospitals and institutes of Lahore i.e. Services Hospital, Jinnah Hospital, UOL Teaching Hospital, Gulab Devi Hospital, Mayo Hospital, Bajwah Hospital, Iqra Medical Complex, Gosha e Shifa Hospital, Farooq Hospital, Fatima Memorial Hospital, Hajrah Hospital, Ganga Ram Hospital, Life Care Hospital, General Hospital, Hameed Latif, Wapda Hospital, Najam Hospital, PSRD Hospital, Children Hospital, Rescue 1122 (EMS=Emergency Medical Services). Data was collected from these paramedics including Ward boys, Nurses, Midwives and EMS. A comparative cross-sectional survey was conducted and 210 members were studied. A well-structured questionnaire(1) based on Thurston scale "yes" and "no" was used, which was filled by both gender paramedics working in these settings. All participants were chosen via simple random sampling.

Results: Results were divided in three domains. First assessed demographics, second assessed knowledge while Third domain assessed the practice of knowledge by the participants. Results were represented in Graphs, Tables and Cross Tabulations. Data was analyzed on SPSS (version 20). First domain showed that participants are usually from lower class and least from middle class, second domain determines that female participants have good knowledge in contrast to third domain that showed that male participants have good practice.

Conclusion: Valid Conclusion showed that both gender participants should increase both knowledge as well as practice of Correct postural biomechanics.

Keywords: Body mechanics, Knowledge, Practice, Paramedical staff, male and female, Lahore, Pakistan.

INTRODUCTION

Biomechanics is the term which investigate the mechanical aspect of body, human development and its interaction with the environment. Posture biomechanics is the structural system of body, a part of wellbeing and health it has fundamental significance throughout in life. Posture is affected by environmental stress for example, occupation. Postural correction is essential for appropriate postural biomechanics. The term "paramedical staff" means an individual including in emergency medical technicians, nursing staff, ward boys, helpers, midwives, dental technicians, dieticians, and others play important role in any medicinal services framework.

PMS is the biggest working gathering in a social insurance set-up and is known to assume a noteworthy job in the framework's prosperity.(2) The intra hospital and inter hospital transfer of basically sick patients is inevitable part of EMS. Basically sick patients have a high danger of morbidity and mortality during transport.(3)

The terrible exchange could make the patient befuddled, which expanded frailty. At the point when the medical attendant on the ward wound up mindful of this, it likewise influenced her consideration of the patient. According to that attendant, the patients we have, who come in here, they require total care, they can barely oversee anything, so we pretty much restore them ourselves before they're passed on in the framework or sent home.(4)

The utilization of mechanical assistive equipment's may not generally be the best way to deal with diminishing back injuries in all circumstances.(5) The roof mounted patient lift frameworks forced spine powers upon the lumbar spine that would be viewed as sheltered, while floor-based patient dealing with frameworks could expand anterior/posterior shear force during patient transfer maneuvers .(6)

Electromyography lifting from couch to mobility chair and from it to the couch. Patient handlers showed around multiple times more noteworthy trapezius and latissimus dorsi activity. Muscles of whole body responded when the method of exchange of sufferer from one place to another employed physically by the workers assigned for this purpose. The muscular actuation examples could enhance through preparing systems to grow better patient taking care methodologies.(7)

Paramedics, including orthopedic nurses, confront various problems in the working environment for musculoskeletal disorders, for example, back and shoulder injuries. These disorders are related with over-the-top back and shoulder stacking because of manual patient taking care of, applying unnecessary powers amid pushing as well as pulling, required utilization of bad posture for patient consideration, and working extend periods of time and shift work. No paramedic laborers are safe from damage since they are immune to injury due to occupational factors including doctor's facilities, nursing homes, crisis administrations, basic consideration, working rooms, orthopedic units, and home human services situations. (8)

The use of lumbosacral corsets to protect the last part of has been in discussions for the longer time in different faculties relating to it. In spite of the fact of the binders were used to prevent the relative injuries. These binders are portrayed as permeable to air, lighter groups, with two times side uplifts; take into consideration distinctive dimensions of weight and tightness. Those advancing the utilization of black belts guarantee they

- ✓ decrease the internal spinal pressures during the effort,
- ✓ involve the stomach to exert pressure to equalize the spinal efforts,
- ✓ solidify the vertebral column,
- ✓ limit bowing movements, and
- ✓ recalling of the person wearing the binder to lift a few hurdles to recognize the device worn, including:
- ❖ Persistent revulsion of the gear,
- ❖ Shaky device or operationally hard to utilize,
- ❖ Capacity issues/gear is situated in a badly aligned device
- ❖ Bad upkeep and washing of hardware,

The period requirements,

- ❖ Lacking quantity of accessible lifts,
- ❖ Lack of preparation on gadget
- ❖ Room confinements to manage device,
- ❖ Wrong device used.

❖ Weight confinements, changes made to the workplace, design, apparatuses, or hardware utilized at work, or changing the manner in which a vocation is done to maintain a strategic distance from business associated muscular risks. these checkpoints are the favored arrangements since they make perpetual differences that dispose of dangers at the recognized area.(9)

MATERIAL AND METHODS

A Comparative Cross-sectional study was conducted. Data was collected from Surgical, Orthopedic, Emergency, Operation Theater, Gynae & Labor wards of 20 different hospitals and institutes of Lahore i.e. Services Hospital, Jinnah Hospital, UOL Teaching Hospital, Gulab Devi Hospital, Mayo Hospital, Bajwah Hospital, Iqra Medical Complex, Gosha e Shifa Hospital, Farooq Hospital, Fatima Memorial Hospital, Hajrah Hospital, Ganga Ram Hospital, Life Care Hospital, General Hospital, Hameed Latif, Wapda Hospital, Najam Hospital, PSRD Hospital, Children Hospital, Rescue 1122 (EMS=Emergency Medical Services). Data was collected from these paramedics including Ward boys, Nurses, Midwives and EMS. Study was completed in four months duration. Simple Random Sampling technique was used to obtain the sample. A sample size of 210 participants equally from both genders was taken in the study by using online sample size calculator with 95% significance level. Paramedical staff members having age ≥18 and ≤50 years with either gender was included. Paramedics like Ward boys, midwives, nurses & EMS were included. Paramedics having age <18 and >50 years were excluded. Paramedics with other MSk and Cardiopulmonary problems, Compensatory posture and repetitive injuries were excluded. Postural biomechanical awareness among these both gender paramedics was assessed via a Well Structured Questionnaire(1) based on Thurston scale of “yes” and “no”. The data was analyzed using SPSS 20 version. Age was expressed as mean ±S.D. whereas qualitative variables like knowledge and practice was expressed in the form of cross tabulation.

RESULTS

210 Paramedics were included, 105 male and 105 female were included in the study and mean age was 30.80. 1st Domain: Demograhic Data

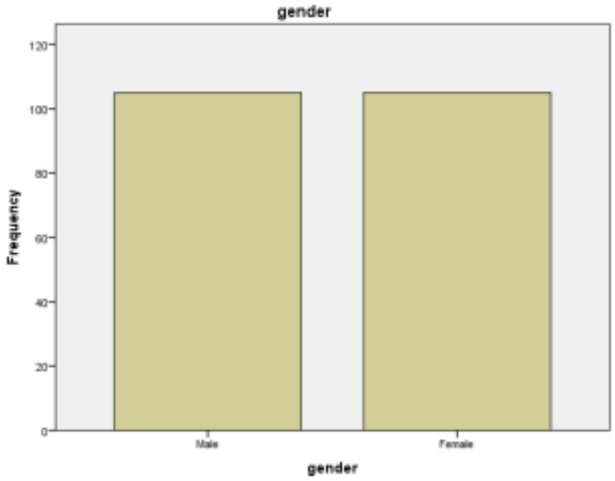

Figure 1

Figure 1 shows the equal distribution of both male & female participants in this study and its basic way to conduct the comparative study among both genders.

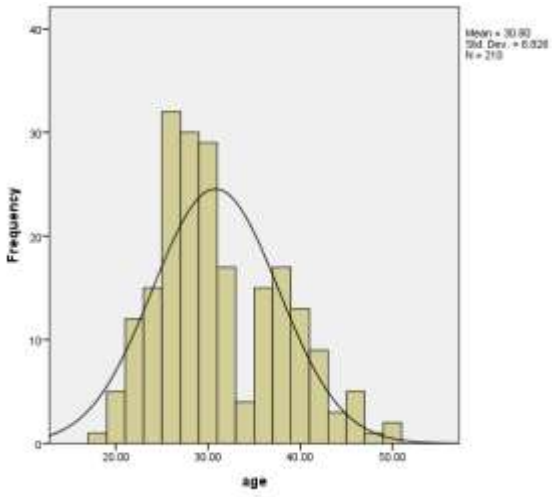

Figure 2

Figure 2 represents the “Normal Distributed Curve” of Age in which N= 210 with Mean=30.80±6.862.

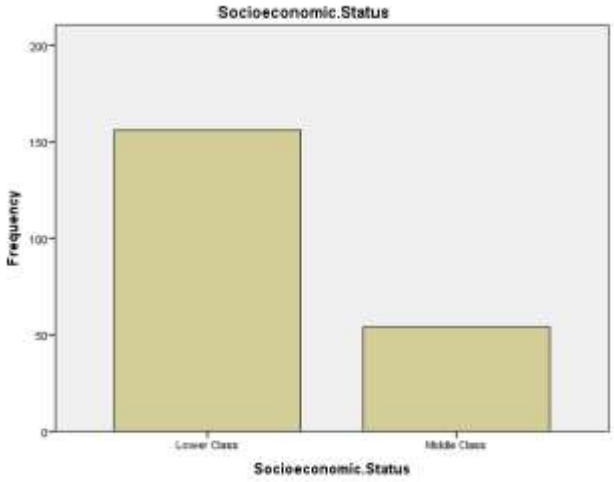

Figure 3

Figure 3 represents that the Participants were mostly from Lower Class as compared to the Middle Class.

Table 1:

Name of institutes		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	.5	.5	.5
	Services Hospital, Lahore	9	4.3	4.3	4.8
	Jinnah Hospital, Lahore	17	8.1	8.1	12.9
	UOL Teaching Hospital	1	.5	.5	13.3
	Gulab Devi Hospital	18	8.6	8.6	21.9
	Mayo Hospial	12	5.7	5.7	27.6
	Bajwah Hospital	7	3.3	3.3	31.0

	Iqra Medical Complex	9	4.3	4.3	35.2
	Gosha e Shifa Hospital	9	4.3	4.3	39.5
	Farooq Hospital	10	4.8	4.8	44.3
	Fatima Memorial Hospital	1	.5	.5	44.8
	Hajrah Hospital	6	2.9	2.9	47.6
	Ganga Ram Hospital, Lahore	11	5.2	5.2	52.9
	Life Care Hospital	1	.5	.5	53.3
	General Hospital, Lahore	27	12.9	12.9	66.2
	Hameed Latif Hospital, Lahore	25	11.9	11.9	78.1
	Wapda Hospital, Lahore	13	6.2	6.2	84.3
	Najam Hospital, Lahore	3	1.4	1.4	85.7
	PSRD Hospital, Lahore	5	2.4	2.4	88.1
	Children Hospital, Lahore	4	1.9	1.9	90.0
	Rescue 1122	21	10.0	10.0	100.0
	Total	210	100.0	100.0	

Table 2:

Designation		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ward Boy	82	39.0	39.0	39.0
	Mid Wife	63	30.0	30.0	69.0
	Nurse	44	21.0	21.0	90.0
	EMS	21	10.0	10.0	100.0
	Total	210	100.0	100.0	

Description: The study shows that the Male participants ratio includes Ward Boys 39%(N=82) and EMS 10%(N=21) while Female participants ratio includes Mid wives 63%(N=30) and Nurses 21%(N=44) as mentioned in **Table 2.**

2nd Domain: Knowledge of Participants

Table 3: Question#1 gender * Does the use of body mechanics can reduce back pain? Crosstabulation

Count		Does the use of body mechanics can reduce back pain?		Total
		Yes	No	
Gender	Male	92	13	105
	Female	98	7	105
Total		190	20	210

Description: In this study the N=90 Male Participants and N= 98 Female Participants were agreed that the use of Body Mechanics can reduce the back pain while the N=13 Male Participants and N=7 Female Participants were Disagreed that Use of Body Mechanics can reduce the back pain so the Total Agreed Participants were N=190 and Total Disagreed Participants were N=20 out of Total Participants N=210 as mentioned in **Table 3.**

Table 4: Question#2 gender * Do you agree with the Statement: - "Lifting patient or heavier is better to use a bed sheet from a mass hand? Crosstabulation

Count		Do you agree with the Statement: - "Lifting heavier patient by using bed sheet is better than from a mass hand?		Total
		Yes	No	
Gender	Male	100	5	105
	Female	94	11	105
Total		194	16	210

Table 5: Question#3 gender * If you do not maintain good posture while doing the procedure do you have back pain? Crosstabulation

Count		If you do not maintain good posture while doing the procedure do you have back pain?		Total
		Yes	No	
gender	Male	95	10	105
	Female	98	7	105
Total		193	17	210

Description: In this study the N=100 Male Participants and N= 94 Female Participants were agreed that lifting heavier patient by using bed sheet is better than from a mass hand while the N=5 Male Participants and N=11 Female Participants were Disagreed that lifting heavier patient by using bed sheet is better than from a mass hand so the Total Agreed Participants were N=194 and Total Disagreed Participants were N=16, out of Total Participants N=210 as mentioned in

Description: In this study the N=95 Male Participants and N= 98 Female Participants were agreed that they would have back pain if they do not maintain good posture while the N=10 Male Participants and N=7 Female Participants were Disagreed that they would have back pain if they do not maintain good posture so the Total Agreed Participants were N=193 and Total Disagreed Participants were N=17 out of Total Participant=210 as mentioned in **Table 5.**

DISCUSSION

The Purpose of this study was to determine the postural biomechanical awareness among male and female paramedical staff and also its practice at work. To know the prevalence of postural biomechanical awareness among both genders paramedical staff a well-structured questionnaire(1) based on Thurston scale “yes” and “no” was used to conduct this comparative cross-sectional survey and 210 paramedics equally from both genders were included. Results were divided in three domains. Our demographic data shows that there were equal number of participants from both genders; 50% (N=105) male & 50% (N=105) female participants. Most of the participants were of mid 20’s years old while others were of 30-50 years old. Majority participants were from Lower Class that is 74.3% (N=156) and least were from Middle Class that is 25.7% (N=54). Majority of the participants 39% (N=82) were ward boys, 30% (N=63) Midwives, 21% (N=44) Nurses, 10% (N=21) EMS out of 100% (N=210). Knowledge and Practice of that knowledge is assessed via a well-constructed questionnaire. A study by Dominque laraouche and colleagues analyzed 71 different transfers showed that moving a patient from ground is the riskiest compared to moving a patient from a raised surface. It shows when the patient is moved from a raised surface the lifting index and perceived exertion were the lowest(10), Similarly in our study the N=93 Male Participants and N=96 Female Participants were Disagreed that the object must be close to gravity so the Total Disagreed Participants were N=189 and Total Agreed Participants were N=21, out of Total Participants N=210, It means it’s easier for paramedics to transfer a patient from stretcher as compared to ground. Akhtar & Colleagues in 2017 assessed the biomechanical knowledge and practice of nurses working in Punjab institute of cardiology, they concluded that out of 216, 140 (65%) of the respondent were having good knowledge about body mechanic technique followed by 45 (20%) have average knowledge and 31 (15%) were having no knowledge. In contrast, our study assessed the knowledge and practice of both male and female paramedics including nurses, ward boys, midwives and EMS members from 20 different hospitals and institutes of Lahore providing these services and concluded that female participants have good knowledge as compared to male participants while the practice of male participants is more as compared to female participants, it is

actually because male paramedics are more involved in patient transfer as compared to female paramedics who are more indulge in patient transfer just in gynae and labor wards as compared to other wards. So, the knowledge of postural biomechanics and its practice during work is essential for both gender paramedics to reduce the back ache and related MSK problems as well as other secondary issues.

CONCLUSION

This study revealed the comparison of postural biomechanics awareness among male and female paramedical staff during patient transfer. The research concluded that the knowledge of female participants regarding the Postural biomechanical awareness during patient transfer is slightly higher than the male participants but the practice of knowledge rate is higher in the male participants as compared to the female participants during transferring the patient as male paramedics are generally more involved in-patient transfers as compared to female paramedics in these settings except gynae and labor wards. The study also revealed that most of the participants of both genders belong to the lower class than middle class regarding socioeconomic status.

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