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AN OWAS BASED ANALYSIS OF PHYSIOTHERAPIST WORKING POSTURES

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ABSTRACT:

Objective: To identify the harmful working postures for the physiotherapist while performing activities at various activities at various clinical and hospital setup. **Design:** An observational study design. **Methodology:** 60 physiotherapists out of 100 are included after fulfilling the inclusion criteria of involvement in direct patient care at least 1r/week at their primary position & were members of IAP. Procedure: Minimum time taken was 10 min. per subjects. Assessment was done; basic activities distinguished for the OSWAS analysis like patient transfer, positioning, passive ROM, joint mobilization & manipulation. Subjects were equally divided for workgroup analysis i.e, 12 for each workgroup. Subjects working posture were recorded by using video recorder or in assessment form i.e, OSWAS posture code information. **Result:** reveals that subject doing task like patient transfer (45%), manipulation (27%), & mobilization (27%) which comes under action category 3 & 4 respectively have higher involvement of working load & are more prone to work related musculoskeletal disorder as compare to patient positioning & patient PROM activities.

KEYWORDS:

Physiotherapy assesses, prevent & treat movement disorders. Their Goal of treatment is to improve Physical Functions, improve Biomechanical aspects of movement. (Mc Millan, as cited by Pinkston 1989).

The work of physiotherapists is often associated with heavy physical workload is often associated with a heavy physical workload and many musculoskeletal complaints. The majority of investigations study the relationship between patients – lifting activities and physical workload, results of such research are very important, because they seem to identify a major cause of physical problems with in the profession. However, there seems to be little proof that physical workload is high only during patient transfer activities.[1]

Physiotherapist has associated work related musculoskeletal disorders with occupational risk factors like work load factors, posture, movement. The level of exposure to physical workload can be normally assessed with respected to intensity or magnitude, repetitiveness and duration. Various methods are now available for assessing exposure to the risk associated with work-related musculoskeletal disorder, or identifying potentially hazardous jobs or risk factors within a job. These include observational methods, instrumental or direct methods, self reports and other psycho physiological methods.[2]

There will be strong relationship between poor faulty posture, workplace design & disease of musculoskeletal system (Perrot 1961).The prolonged static loads are probably the major factor in the modern working of life in causing most work-related musculoskeletal disorders. Andeson et al, [1985],[3] Exposure to risk factors for WMSDs is likely to result from patient care activities that include lifting patients, transferring patients, and the performance of manual therapy.

Due to this Physiotherapist put extra effort to produce force, that can lead tp hazardous posture.[4]

In order to prevent injury, physical therapist should know the normal anatomical movement for safe & good working posture. [5]

It was also believed that musculoskeletal problems during treatment are due to acute and chronic overload injuries. The musculoskeletal problem will arise when the load/load ability equilibrium of the human body is disturbed (Zijlstra, 1989; Pope et al., 1991).

According to Biering-Sorenson (1985) 42% of LBP due to overload injuries at hospital setups. Abenheim and Suissa, 1987; Andersson, 1990, Frymoyer and Andersson, 1991 also found that overload injuries are important contributors to LBP. Measures for the prevention of such musculoskeletal injuries might involve various ergonomic measures aimed at reducing the load on the locomotor system by altering the design of equipment in the workplace. Ergonomic [Greek ergon [work] + nomon [law] focuses on the study of work performance with an emphasis on worker safety and productivity. Although several definitions have been proposed, one of the best was provided by Chapins [1991], who use the term ergonomic and human factors interchangeably: "Human factor [ergonomics] is a body of knowledge about human abilities, human limitations, and other human characteristics that are relevant to design.

Kantowitz and Sorkin [1983] noted that "the first commandment of human factors is 'Honor Thy User.'' Characteristic of Humans. Ergonomics can be considered a design philosophy that focuses on supplying a product that

safety, ease of use, comfort, and efficiency.

The important objective of treatment to assess, prevent, and treat movement dysfunction that leads to increase human motion and function.

Keeping this in mind the study is designed with the purpose to identify the harmful working postures for the Physiotherapists, while performing activities at various clinical and hospital setups like I.P.Ds, O.P.Ds, and I.C.Us.

It give an overview existing technique (largely posture based), i.e., **OWAS – Ovako Working Postural Analysiing System,** a study of the physical load on working postures among the physiotherapists will provide biomechanical data about the posture and movement characteristics while performing various activities like: -

I. Patient Transfers.
II. Positioning techniques.
III. Passive Range of Motion.
IV. Joint Mobilization techniques &
V. Soft tissue manipulations, to minimize or avoid the physical work load and work related musculoskeletal disorders.

In order to reach these aims the OWAS method was extended with computerized procedure for data analysis, enabling to relate working postures to activities.

This tool has good reliability and validity which will be discussed in detail in the review of literature in chapter 2.

The OWAS tool has been selected for the study because:

a. Relatively easy to learn and use.
b. It is quick and practical.
c. It is easy to be conducted in an Indian clinical setting.
d. Results can be compared against benchmarks to establish intervention priority.
e. Scores at each body part can be used for "before" and "after" comparisons to evaluate intervention effectiveness.
f. Scores at each body part can be used in epidemiological studies.
g. Relatively easy to customize system to specific user need.

AIMS AND PURPOSE OF THE STUDY

1- To determine to the working posture load of Physiotherapists;
2- To determine the activity involving poor/awkward working postures.

METHOD & METHODOLOGY

Generally the method of this study is collecting the data's of Physiotherapists at various working setups and observes the work tasks and pastures, analyze the posture data by using software OWAS to identify the action categories.

POPULATION

100 Physiotherapy students were participated in the study.

SOURCE AND SAMPLE

Subjects were chosen according to convenient and who fulfilled the inclusion criteria and were ready to attend the program was selected Sampling methods, & was screened from O.P.Ds. Only 60 subjects out of 100 fulfill the inclusion criteria.

SELECTION CRITERIA

Inclusion criteria –

The study includes Physiotherapists who are willing to take participate in the study and were members of I.A.P (INDIAN ASSOCIATION OF PHYSIOTHERAPISTS) and involved in direct patient care at least 1 hour per week at their primary position.

Exclusion criteria

There were no exclusion criteria.

RESEARCH DESIGN

An Observational study to analyze the physical work load of physiotherapists during working day.

PROCEDURE & PROTOCOL

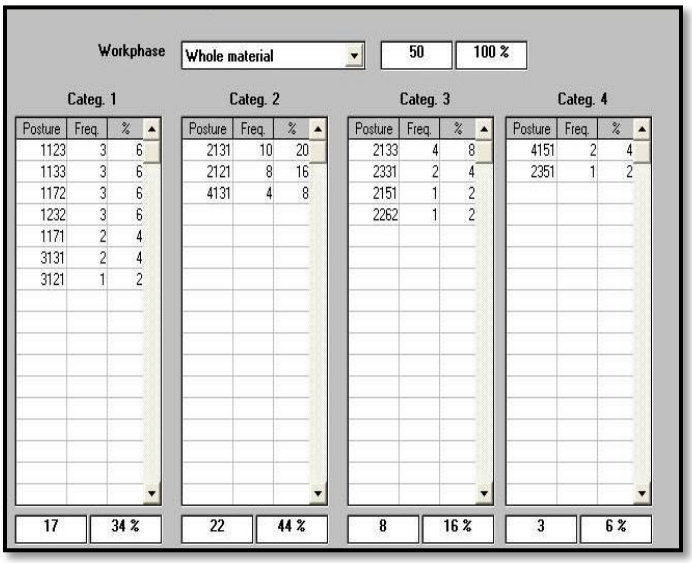
100 subjects were taken for the study out of which only 60 subjects fulfill the inclusion criteria; minimum time taken was 10 min per subjects. Informed consent was taken from each subject. Assessment was done; basic activities distinguished for the OWAS Analysis like Patient Transfer, Positioning, Passive Range of Motion, Joint Mobilization, and Manipulation. Subjects was divided equally for the workgroup analysis i.e., 12 subjects for each work group. Subjects working postures will be record by using video recorder or in assessment form i.e., OWAS posture code information. The observations were always made at 30 seconds or 60 seconds intervals. Data collection was on OWAS assessment posture. Result comparison & identify the awkward posture.

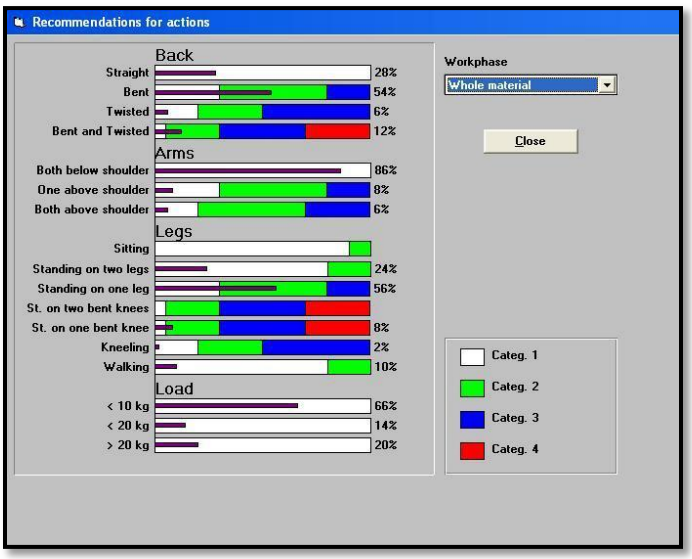
RESULT

Work group: activities distinguished for the OWAS analysis

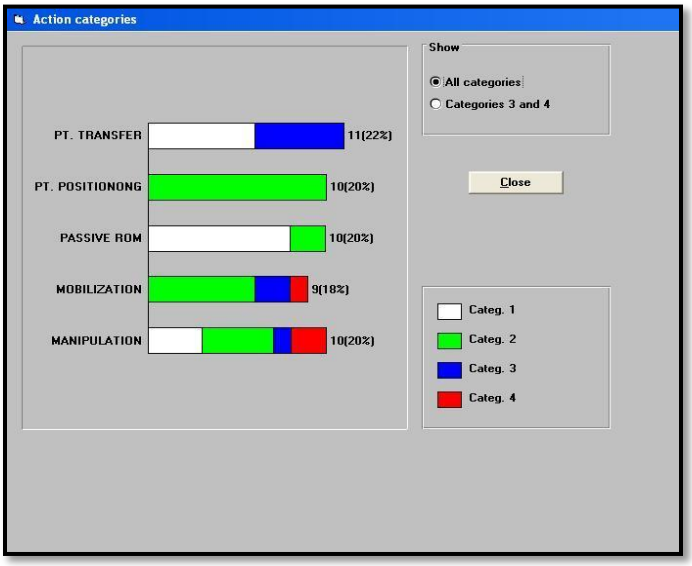
Work Place Code	Activities
0	Patient transfer
1	Patient Positioning
3	Passive Range of Motion
4	Mobilization & Manipulation

TABLE 1.1 - ACTION CATEGORY FOR ALL ACTIVITIES



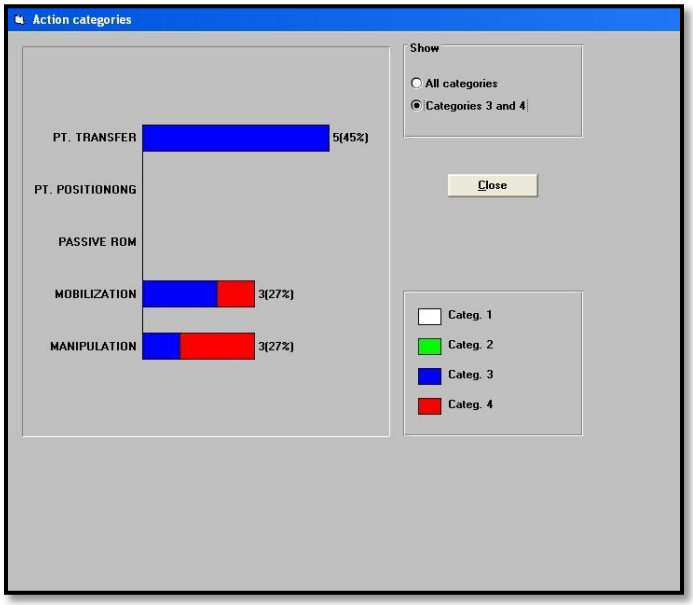


GRAPH 1.1 – ALL POSTURE OBSERVED WHILE PERFORMING THE TASK BY PHYSIOTHERAPISTS (WIN OWAS SOFTWARE, 2007)[30]



GRAPH 1.2 – ACTION CATEGORY FOR ALL ACTIVITIES.

GRAPH 1.3- ACTIVITIES COMES UNDER THE ACTION CATEGORY UNDER 3 & 4



The result reveals that the subjects doing tasks like Patient transfer (45%); Manipulation(27%) and Mobilization (27%) which comes under the action category 3 and 4 respectively have Higher involvement of working load and are more prone to work related Musculoskeletal disorders ,as compare to Patient Positioning and patient Passive Range of Movement activities.

Action Categories	%	Activities
AC-3	45	Patient Transfer
AC-4	27	Mobilization & Manipulation

DISCUSSION

In this study by means of OWAS method to assess the postural load in the physiotherapy job. Manual techniques increased the risk for wrist WMSDs. This finding was consistent with the results of prior studies[7–11] and the baseline analysis. Soft tissue work emerged as the most substantial risk factor, with the ORs for the higher exposure categories representing a severe increase in risk. The majority of studies investigating the physical workload of physiotherapists concerned with the working posture analysis, especially when the patient transfer tasks and specially while performing in manipulation techniques on patients which involve the great awkward postures are involved. [6,7,8,9]

Manual therapy has been studied as a risk factor for wrist and hand injuries, [31, 32] but more focus on soft tissue work is urgently needed.

However, in order to confirm the implicit assumption that these activities cause most of the problem mentioned, the contribution of other activities should be investigated.

In the study described here that there is need to gain more

insight in to the physical workload due to awkward posture during different physiotherapeutic interventions.

The results from this study provide quantitative evidence for the need to consider the difference in manual handling operations between 'care handling' and treatment handling'. It was also advisable for Physiotherapist would be preferable to 'fit the work to the physiotherapist', due to the wide range of anthropometric dimensions that will be occurred during treatment. To address the vulnerability of physiotherapists there needs to be serious consideration of both the techniques used and the number of staff required for treatment handling.[25]

This study provide some evidence for the Physiotherapists Work-related musculoskeletal disorders (WMSDs) have a significant impact on physical therapists, and they are prone to Work-related musculoskeletal disorders when they are expose to, patient handling, and manual therapy, in particular, increase the risk for WMSD, so that they need to check themselves.

CONCLUSION

This study presented an ergonomic assessment of the Physiotherapists. The results show that the physiotherapists at the risk of WRMSDs while are work in an inadequate working environment with postures. This study shows that working a physiotherapist in a Hospital, Private setups or in colleges, according to OWAS, is probably harmful as working postures are concerned.

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