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Evaluation Of Ergonomic Risk Factors in Community Pharmacists – A Survey Study

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Abstract: A community pharmacist is a professional who is in direct access to the public and whose duties are widely sought after by the public and patients. Pharmacists comprise the third largest healthcare professionals in the world and pharmacy profession has been evolving steadily over the last decade in India. They work for a prolonged period and all job tasks are performed majorly while in standing. This makes them vulnerable to various musculoskeletal disorders. The study is designed to gather data on postural changes and evaluate whole body posture for the risks associated with job tasks of community pharmacists using the Rapid Entire Body Assessment (REBA) method. Also, a thorough assessment of pain components was done in the pharmacists that were experiencing pain. 100 subjects were involved in the study. It was found that dull aching type of pain was commonly experienced and low back was the most prevalent site followed by legs and heels. From the analysis, it concludes that community pharmacists are subjected to a high risk of having work related musculoskeletal injuries/disorders.

Keywords – Community Pharmacist, Rapid Entire Body Assessment (REBA) Scale, Musculoskeletal Disorders

I. INTRODUCTION

A community pharmacy, often referred to as retail pharmacy or retail drug outlets, is a place where medicines are stored and dispensed. The general population usually calls community pharmacies as "medical stores." [6] A community pharmacist is a professional who is in direct access to the public and whose duties are widely sought after by the public and patients.[6] Pharmacists comprise the third largest healthcare professionals in the world and pharmacy profession has been evolving steadily over the last decade in India.[16] Today, pharmacists have expanded their role from dispensing to pharmaceutical care by maximizing the benefits of medications and their safety.[16]

The basic duty of a pharmacist is to check prescriptions from physicians before dispensing the medication to the patients to ensure that the patients do not receive the wrong drugs or take an incorrect dose of medicine.[7] Much of their work is related to patient safety, so a pharmacist makes sure the patient is not prescribed a medication that he might be allergic to, or that will interact with food or another medication, he/she is already taking.[7]

A pharmacist may offer consultation services for the management of complex diseases, such as diabetes, hypertension, arthritis, etc., or give general advice on diet, exercise, and managing stress.[7] They work in a pharmacy (medical store) for 10 to 14 hours a day, and majority of their job tasks are performed while in standing.[6] Hence their posture and prolonged period of work, make them vulnerable to various musculoskeletal disorders.[6]

One of the methods to identify and analyse work posture to ensure safety and comfort in work is Rapid Entire Body Assessment (REBA) Scale. This scale has a reliability of 62% to 85% [8]. This ergonomic assessment tool uses a systematic process to evaluate whole body postural MSD and risks associated with job tasks. A single page worksheet is used to evaluate required or selected body posture, forceful exertions, type of movement or action, repetition and coupling.[8]

The REBA was designed for easy use without need for an advanced degree in ergonomics or expensive equipment. Using the REBA worksheet, the evaluator will assign a score for each of the following body regions: wrists, forearms, elbows, shoulders, neck, trunk, back, legs and knees.[8] The different postures that pharmacists use while working their pharmacy is scored using the REBA scale.[8] The total score is calculated which is then categorized in 5 different categories that provide an idea about the amount of risk for musculoskeletal injuries that is present while working.[8]

The study is designed to gather data on the postural changes and evaluate whole body posture for the risks associated with job tasks of community pharmacists using Rapid Entire Body Assessment (REBA) Method, since enough study has not been conducted on this profession. Aim of the study is to evaluate ergonomic risk factors in as well as to understand the type, site and duration of pain in community pharmacists.

II. METHODOLOGY

The study design is Cross Sectional Study and it uses purposive type of sampling. A total of 100 Community Pharmacists from all over Navi Mumbai were included in the study.

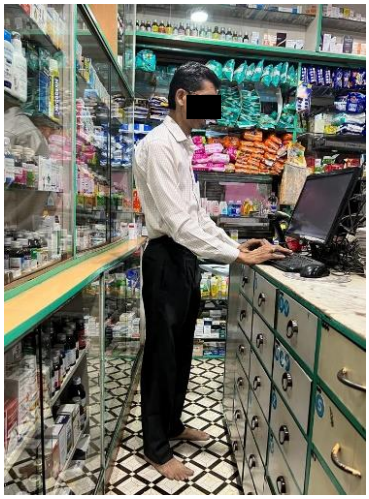
Inclusion Criteria : 1) Participant should be a licensed pharmacist.
2) Participants should be working as a community pharmacist for a minimum period of 2 years.

Exclusion Criteria : 1) Any participant with trauma or those with congenital deformity, serious neurological condition, recent episodes of limb injuries or fractures.
2) Non-consent to participation.

Instrumentation : Pen, pencil, consent forms, information collection sheets, data collection sheets, REBA Scale

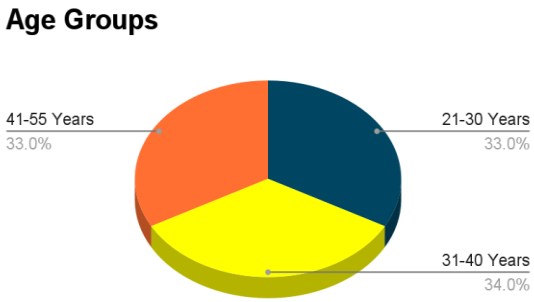
III. PROCEDURE

A survey study was conducted on 100 community pharmacists of Navi Mumbai. Approval was obtained from the Ethical Committee of the institute. Each participant was fully explained about the purpose and procedure of the study. Prior to the commencement of data collection, the participants were asked to sign the consent form. The Consent form and the Information Sheet were taken in English by Investigator as it has an understandable language and involve sufficient information to make an informed decision for participants whether to take part in research or not and the information shall be kept confidential. Demographic data and pain history (type, site and duration) was collected by means of an information sheet. Evaluation of working posture was done using the Rapid Entire Body Assessment Scale and then the score for each participant was calculated. Analysis of the above mentioned outcome was done and graphs were prepared using Microsoft Excel Sheets. The assessment was started by interviewing the worker being evaluated to gain an understanding of the job tasks and demands, and observing the worker's movements and postures during several work cycles. Selection of the postures to be evaluated was be based on the most difficult postures and work tasks (based on worker interview and initial observation), the posture sustained for the longest period and lastly the posture where the highest force loads occur. The REBA was conducted quickly, so multiple positions and tasks within the work cycle were evaluated without a significant time/effort cost. When using REBA, only the right or left side was assessed at a time. After interviewing and observing the worker, it was determined if only one arm would be evaluated, or if an assessment is needed for both sides. The REBA worksheet is divided into two body segment sections labelled A and B. Section A (left side) covers the neck, trunk, and leg. Section B (right side) covers the arm and wrist. This segmenting of the worksheet ensures that any awkward or constrained postures of the neck, trunk or legs which might influence the postures of the arms and wrist are included in the assessment. Score Group A (Trunk, Neck and Legs) postures first, then score Group B (Upper Arms, Lower Arms, and Wrists) postures for left and right. For each region, there is a posture scoring scale and additional adjustments which need to be considered and accounted for in the score.



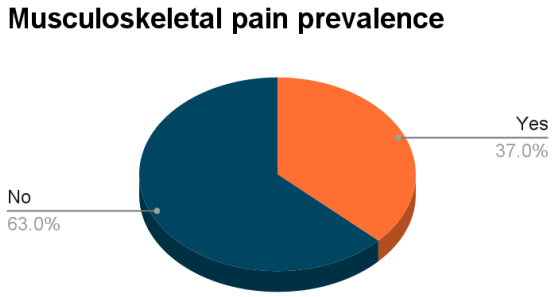
V. DATA ANALYSIS AND RESULTS

A total of 100 community pharmacists participated in the study. The participants were in the range of 21-55 years of age.



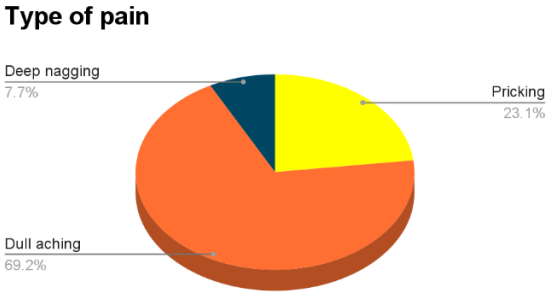
GRAPH 1: Distribution of 100 participants in different age groups

INFERENCE: Out of total 100 community pharmacists, 33 pharmacists belong to age group of 21-30 years, 34 pharmacists belong to age group of 31-40 years and 33 pharmacists belong to age group of 41-55 years.



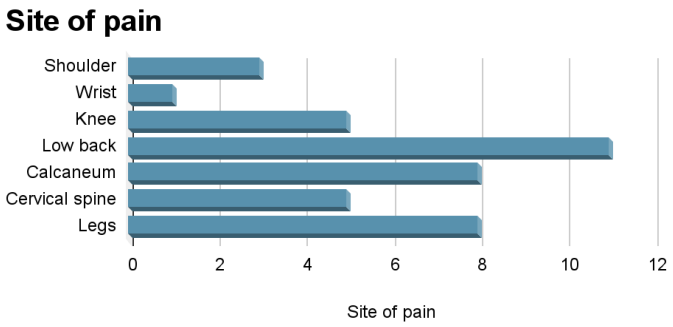
GRAPH 2: Illustrates the prevalence of musculoskeletal pain

INFERENCE: Out of total 100 participants there is a prevalence of musculoskeletal pain in 37 participants and 63 participants do not have any pain.



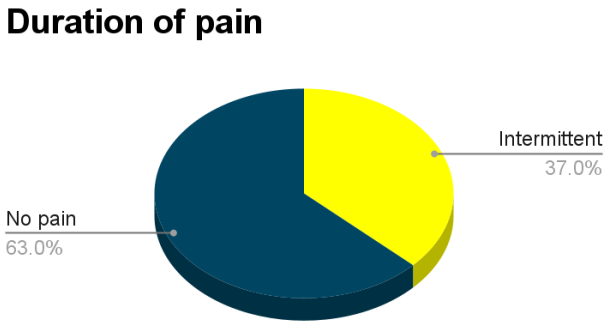
GRAPH 3: Illustrates the different types of pain

INFERENCE: Types of pain present in the participants are - pricking, dull aching pain and deep nagging pain



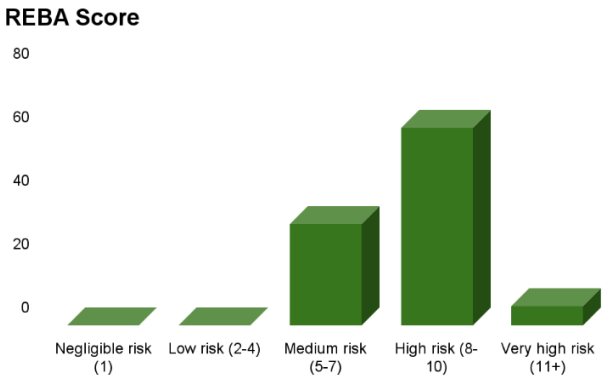
GRAPH 4: Illustrates the different sites of pain present in the body of community pharmacists

INFERENCE: Sites of pain in the community pharmacists include shoulder, wrist, cervical spine, low back, knees, legs and calcaneum.



GRAPH 5: Illustrates the duration for which pain is present in the body.

INFERENCE: Out of 100 participants, 37 participants that perceive pain are having intermittent type of pain.



GRAPH 6: Distribution of REBA Scores

INFERENCE: Out of total 100 participants; 0 participants have negligible risk, 0 participants have low risk, 32 participants have medium risk, 62 participants have high risk and 6 participants have very high risk.

VI. DISCUSSION

Analysis of collected data was done. The data was collected by means of an information sheet and REBA scale from 100 community pharmacists who participated in the study. The data was analysed and divided in two parts which are components of pain assessment (type, site, duration) and REBA Scores. According to the collected data, out of total 100 participants there is a prevalence of musculoskeletal pain in 37 participants and 63 participants do not have any pain. Those 37 participants who have pain, majorly fall in the age group of 41-55 years and few are between 31-40 years of age. This might be because of the degenerative changes taking place due to aging as well as longer duration of work years.[9]

Sites of pain in the participants include shoulder, wrist, cervical spine, low back, knees, legs and calcaneum. Out of these sites, maximum number of participants have pain in the low back which is due to standing position during long length of working hours. While there are many underlying reasons for low back pain during prolonged standing, the precipitating cause is usually postural.[10] When you stand for a length of time, your pelvis is often pushed backward, increasing the curve of your lower back (lumbar region). This puts increased pressure on the soft tissues surrounding the spine, causing your lower back muscles to tighten or even go into spasm, resulting in pain in the joints and nerves of your spine.[10]

This is followed by pain in the legs and calcaneum which is again due to longer hours of standing posture. Keeping the body in an upright position requires considerable muscular effort. Standing effectively reduces the blood supply to the loaded muscles. Insufficient blood flow accelerates the onset of fatigue and causes discomfort in the muscles of the legs and feet (these are the muscles used to maintain an upright position).[11] The worker suffers not only muscular strain but other discomforts also. Prolonged and frequent standing, without some relief by walking, causes blood to pool in the legs and feet. This pooling may progress over time to chronic and painful varicose veins and inflammation.[11]

Types of pain present in the participants are pricking pain in calcaneum (heel). It may result from excessive pressure on the heel due to standing for long periods, carrying extra weight or the participant might have a chance of occurrence of plantar fasciitis or calcaneal spur in the future. Having tight calf muscles or high arches may also lead to heel pain.[12] Second type of pain experienced is dull aching pain in the legs. Most leg pain results from long standing postures, wear and tear, overuse, or injuries in joints or bones or in muscles, ligaments, tendons, or other soft tissues. Some types of leg pain can be traced to problems in your lower spine (lumbar region). Leg pain can also be caused by blood clots, varicose veins, or poor circulation.[13] Thirdly, dull aching/deep nagging pain in low back and joints is also commonly experienced by the pharmacists. Common causes of dull aching pain in the lower back include trauma from an injury, muscle strains or poor posture. A herniated disc or arthritis in the lower back can also cause aching pains.[13]

All 37 participants that perceive pain, have intermittent type of pain. This is because they have chronic pain which lasts for more than 3 months. Rapid Entire Body Assessment Scale (REBA) is an ergonomic assessment tool uses a systematic process to evaluate whole body postural MSD and risks associated with job tasks of community pharmacists.[8] After the data for each region is collected and scored, tables on the form are then used to compile the risk factor variables, generating a single score that represents the level of MSD risk:

Score	Level of MSD Risk
1	negligible risk, no action required
2-3	low risk, change may be needed
4-7	medium risk, further investigation, change soon
8-10	high risk, investigate and implement change
11+	very high risk, implement change

REBA scores for all 100 participants were calculated where 0 participants have negligible risk, 0 participants have low risk, 32 participants have medium risk, 62 participants have high risk and 6 participants have very high risk of MSDs.

VII. CONCLUSION

Maximum number of participants experience dull aching type of pain and low back is the most involved site of pain, followed by the legs and the calcaneum. The study reveals that 32% participants are at medium risk, 62% at high risk and 6% at very high risk of musculoskeletal injuries/disorders. Thus, there is a prevalence of ergonomic risk factors in community pharmacists.

VIII. LIMITATIONS

The study was limited to a smaller group of population, whereas a larger sample size could have been assessed. The study does not provide a clear understanding about the various musculoskeletal injuries/disorders likely to take place in particular joints. The study could not assess the exact amount of load/weight lifted by the participants while performing their daily work activities.

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