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Work Related Discomforts from Perception of Optometrists, in Saudi Arabia

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Abstract: Work-related discomfort is a growing problem around the world that affects not only the health and well-being of optometrists, but also the productivity. Work-related discomfort arises where work demands of various types and combinations exceed the person's capacity and capability to cope. In addition, stress can be caused by various events. For example, a person might feel under pressure if the demands of their job (such as hours or responsibilities) are greater than they can comfortably manage. Work-related physical discomfort reported in Saudis optometrists. The purpose of this paper is to explore the personal consequences of work-related discomfort. 129 optometrists with self-reported work-related discomfort participated in a 30-minute telephone or face-to-face interview related to ergonomics and physical comfort. The questionnaire gathered demographic data as well as information on occurrence of musculoskeletal complaints in the previous 12 months. Four avenues were investigated; namely, description of discomfort, non-work contributing factors, whether the participant has ever stopped work due to discomfort, and the treatments accessed to alleviate discomfort. These data were subject to qualitative and quantitative analyses. Reported discomfort ranged from mild to severe. 21participants (16.3) hospitalized because of discomfort. Moreover, 108 participants (83.7) never been hospitalized because of discomfort. In addition, the results highlighted that 110 participants (85.3%) ever had to change jobs or duties because of this discomfort.19 participants (14.7%) never had to change jobs or duties because of this discomfort. Although their work related discomfort, 62.8% expressed that their discomfort did not prevent them from performing certain tasks. While 37.2% % expressed that their discomfort prevented them from performing certain tasks.

Keywords: Work-related physical discomfort – ergonomics –Optometrists-Saudi Arabia.

INTRODUCTION:

Fatigue is 'that state characterized by a lessened capacity or motivation for work, usually accompanied by a feeling of weariness, sleepiness, irritability or loss of ambition'. It is derived from the Latin fatigue, to tire. For the purposes of this article, we regard fatigue as synonymous with tiredness and malaise.

Good ergonomics (working environment) starts with the work environment, from the seating to the lighting, and probably ends with the work hours and the actually work load that an employee is expected to have done. These things, when in a poor state can lead to anything from unhappiness to workers who refuse to live up to their title as workers.

Passier L, McPhail S.(2011)defined The risk factors most frequently perceived by health professionals as the following: work postures and movements, lifting or carrying, patient related factors and repetitive tasks.

Ergonomics is not just the responsibility of the employer, although he plays a major role, but it is also up to the workers to get into good habits. Such as good posture and the correct use of equipment put the employee on the road to happiness and bliss.

We need to emphasize the role of ergonomics, counseling, proper techniques of patient handling, etc., during the training of health professionals so that they can work efficiently. Bad ergonomics can quickly lead to discomfort and possibly even conditions such as RSI. There are anecdotal reports of similar issues within optometry, but there are no published studies to support this.

ABDULJABBAR (2008) reported that Physical tasks and influence musculoskeletal disorders more than active leisure, and psychosocial work factors. The high frequency of musculoskeletal disorders probably reflects the specific type of workload, with high demands on vision and precision and fine manipulative hand movements and working with unsupported, elevated arms. The symptoms might impair work capacity and the future possibility to stay in the profession.

The signs or symptoms of work-related stress can be physical, psychological and behavioral; Physical symptoms include Fatigue-Muscular Tension-Headaches-Heart Palpitations-Sleeping difficulties, such as insomnia. (Better health, 2015).

Roh etal (2014) illustrated that the level of symptoms in the hand/wrist/finger and leg/foot regions had some relation to job stress. And that there are correlations between musculoskeletal symptoms and job stress (2014).

Bongers etal mention that stress symptoms are often associated with musculoskeletal disease and concluded that monotonous work, high perceived work load, and time pressure are related to musculoskeletal symptoms (Bongers etal ,1993).

Brattig etal in their study on 85subjects demonstrated that, 51% suffered from complaints of the musculoskeletal system in the neck thoracic spine area while 24% have skin disease, (Bratting,2014).

Salik etal indicated that according to the results of their study, the rate of musculoskeletal disorders in physiotherapists in Izmir-Turkey has been found to be high due to their profession. Respondents felt that a change in work habits was required in order to decrease the risk of another injury. (Ozcan, 2004).

Therefore, in his study wang etal compared the risk of musculoskeletal disorders among personnel of 10 different medical professions in Taiwan using a nationwide health claims database and concluded that physical therapists showed a significantly higher risk of all eight musculoskeletal disorders. (Wang SY, 2015).

Alrowayeh (2010) reported that WMSDs among physical therapists in Kuwait were common, with lower back and neck affected most. Lower back and neck WMSDs related to the participant's demographics. Hand/wrist WMSDs related to work settings. (Alrowayeh HN, 2010).

Dhimitri , McGwin (2005) referred that musculoskeletal disorders (MSDs) symptoms appear to be common among ophthalmologists with a relatively low response rate. (Dhimitri KC1, 2005).Maryline Rebsamen etal(2010) revealed that expert inspectors took less time to provide an exact response than the less experienced inspectors. (Maryline Rebsamen, 2010).

With the context of risk factors; Cromie etal (2000) indicated that risk factors pertaining to workload were related to a higher prevalence of neck and upper-limb symptoms, and postural risk factors were related to a higher prevalence of spinal symptoms. (Cromie etal (2000).

Alghadir etal (2015) have highlighted that the prevalence of work-related musculoskeletal disorders among dental professionals in Saudi Arabia is high, affecting their daily activities, sometimes even forcing them to change their work setting. Age, gender, specialty of work, work setting, number of contact hours with patients, etc., were all found to be related to their work-related pain.. (Alghadir A, 2015).

We were inspired by this study and by the researches like ; Oduntun, A. O. study (1994) indicated that businesspersons owned Most of the optometry clinics in the Kingdom of Saudi Arabia (74.7 per cent) privately and a majority of clinics (80.2 per cent) had established within the past 10 years. A large proportion (94 per cent) of the practices opened eight to 10 hours a day. Most practitioners were males (97.8 per cent), and many (91.6 per cent) were between the ages of 20 and 40 years. A large percentage (56.2 per cent) of the practitioners have the degree of Doctor of Optometry (OD). (Oduntun, 1994).

Psychosocial factors (for example, workload, and work satisfaction) can contribute to work –related discomfort. Some participants alluded to these issues, which have been identified previously as risk factors for discomfort. There is no sufficient information about the spread of such disorders in Saudi Arabia. Therefore, the purpose of current research was to study the prevalence and distribution of symptoms of MSDs among optometrists in Saudi Arabia & determine the prevalence, characteristics, and impacts of WMSDs in all anatomical areas of the body among optometrists, in Saudi Arabia. Moreover, explore the personal consequences of work-related discomfort .The findings from the study could help identify overall WMSDs and eventually contribute to the development of prevention and intervention strategies.

SUBJECTS AND METHODS

A questionnaire sent to 129 Saudis Optometrists. There was implied consent if optometrists chose to complete and submit the questionnaire. The questionnaire constructed with questions about work-related discomfort in eight different body regions.

129 optometrists with self-reported work-related discomfort participated in a 30-minute telephone or face-to-face interview related to ergonomics and physical comfort. The questionnaire gathered demographic data as well as information on occurrence of musculoskeletal complaints in the previous 12 months. Four

avenues were investigated; namely, description of discomfort, non-work contributing factors, whether the participant has ever stopped work due to discomfort, and the treatments accessed to alleviate discomfort. These data were subject to qualitative and quantitative analyses. Reported discomfort ranged from mild to severe.

The questionnaire consisted of two parts:

Part 1 asked if the optometrist had experienced discomfort in any of eight body regions during the previous 12 months. The term 'discomfort' defined in this study as pain, ache, difficulty with movement and numbness.

Part 2 contained questions specifically related to the body parts; neck, shoulder, upper back, lower back, elbow/arm, wrist/hand, knee/leg and ankle/foot and was partially based on the standardized the research depend on Nordic questionnaires for the analysis of muscular-skeletal symptoms in an occupational setting and job factors; which contribute to discomfort listed by Bork and colleagues.

A separate page for each body region constructed with identical questions on each page included demographic questions.

A more detailed description of the construction of the questionnaire and its distribution given elsewhere, together with the independent risk factors for any discomfort and for severe discomfort.

The questionnaire based on another published survey and simply adapted and translated for the Saudis context. The questionnaire was composed of two parts, personal and occupational. The personal portion asked about general characteristics, including sex, age, weight, and height. The occupational portion inquired about years of experience, work setting, and number of hours of contact with patients per week.

This section also asked whether the subject had experienced any WRMDs. If the answer was yes, then the person would state the type of injury, the body part affected, specific activities caused on occupational injury, the work setting in which the injury occurred, whether the injury was been reported or a physician was consulted, and what sort of treatment was applied. They were been asked also whether they lost work time because of the injury, what activities caused symptoms to recur, and whether the injury had caused the respondent to alter his or her work habits, reduce hours with patients, or change employment settings.

The research used SPSS 15.0 for Windows to analyze Data. Results for the general information items expressed as mean ± standard deviation, and results for items in the occupational portion were expressed by percentages. χ^2 were used to analyze personal characteristics influence (sex, age, number of years in optometric profession practice, number of hours per week in direct patient care) to WRMDs.

The questions in part 2 were derived from two sources. Questions 1 to 7 were based on the standardized Nordic questionnaires for the analysis of musculoskeletal symptoms in an occupational setting.9

The Nordic questionnaire is a research tool frequently used in musculoskeletal research and its content validity and reliability has been established.9 The original Nordic tool used the wording "trouble" and defined this as "ache, pain, or discomfort." The definition of discomfort was expanded in this study to include "pain, ache, difficulty with movement, and numbness" because this more accurately reflects the diversity of symptoms that may be experienced with work-related musculoskeletal disorders.10,11 Nine body regions were described in the original Nordic tool. After feedback from participants in a pilot study, this questionnaire was modified by eliminating questions related to hips/thighs and by expanding "knees" to include knee/leg and "elbow" to include elbow/arm. Adaptations to the original definition12 and to the use of the tool13 have also been used in other published investigations of musculoskeletal discomfort. Question 8 was derived from job factors identified by Bork et al.,5 which contribute to work-related musculoskeletal disorders in physical therapists.

It was adapted to make it relevant for tasks, which may be performed by optometrists. Questions 9 and 10 were open ended and were designed to elicit information that may not have been captured in questions 1 to 8. The questions in part 3 (Personal Particulars) were included in the questionnaire to determine if there were any demographic- or practice-related risk factors for work-related discomfort.

Analysis of Data

The on-line questionnaire data managed within a Microsoft excel spreadsheet. then information was transferred to an SPSS 15.0 program for descriptive analysis and multivariate analysis. Currency of discomfort was taken as discomfort experienced in the 7 days before completing the questionnaire. Severity was dichotomized into the categories "severe" if the discomfort was present for >30 days and "not severe" if present for ≤30 days. In this way, chronic injuries would be classified as "severe. "Data on work-related injury were summarized as a percentage of all respondents and its 95% confidence interval (CI). For the purpose of establishing factors associated with injury, each type of reported injury was analyzed as a binary outcome variable, where 1 indicated the report of a specific type of injury and 0 was used for those reporting no discomfort or injury. For the analysis of the severity of discomfort, each body condition was analyzed as a binary outcome variable, where 1 indicated the report of severe discomfort and 0 was used for those reporting non-severe discomfort. Demographic- and work-related factors were categorical independent variables. Initially, analysis using a chi-squared test was performed to determine associations. Factors that were significant in the analysis were entered in a logistic regression analysis to develop a multivariate model. The method of model building comprised initially of backward stepwise removal starting from the least significant factor until all variables in the model were significant. This was followed by entering back each excluded factor to determine any improved value to the model. Such a factor was retained in the final model if there

was a significant improvement in overall $\chi 2$ value or if it confounded other existing factors. Statistical significance was set at 5%.

The strength of association for significant factors was summarized using the odds ratio (OR) and their 95% CI. Interaction of factors in the multivariate model was tested for significance using the likelihood ratio test and was retained if significant at $p < 0.05$. The goodness-of-fit of the final model was assessed using the Hosmer-Lemeshow test. The discriminatory ability of the model was assessed using the area under the receiver operating characteristic (ROC) curve based on predicted probabilities. Population Attributable Risk (PAR) defined as the reduction in incidence that would be observed if the population were entirely unexposed compared with its current exposure pattern.

RESULTS:

Work-related discomfort has significant financial and personal costs for some Saudis optometrists. These qualitative data used in developing quantitative tools for assessing the impact of discomfort on quality of life for optometrists and their families. The results also highlight the need for preventative action to reduce work-related discomfort within the optometric profession.

Profile of Saudis optometrists who report Discomfort

Table (1) Distribution of Work related discomforts among respondents in any of the following body regions while working in the last 12 months. From the 129 participants 62.8% experienced discomfort in neck, while 55% experienced discomfort in lower back. In addition to that, the low percentage of body regions discomfort was in knee (7.8%) and ankle (11.6) which means that Saudi optometrists suffering from discomforts in neck lower back and shoulder pain with the higher frequencies

Table (1) Distribution of Work related discomforts among respondents

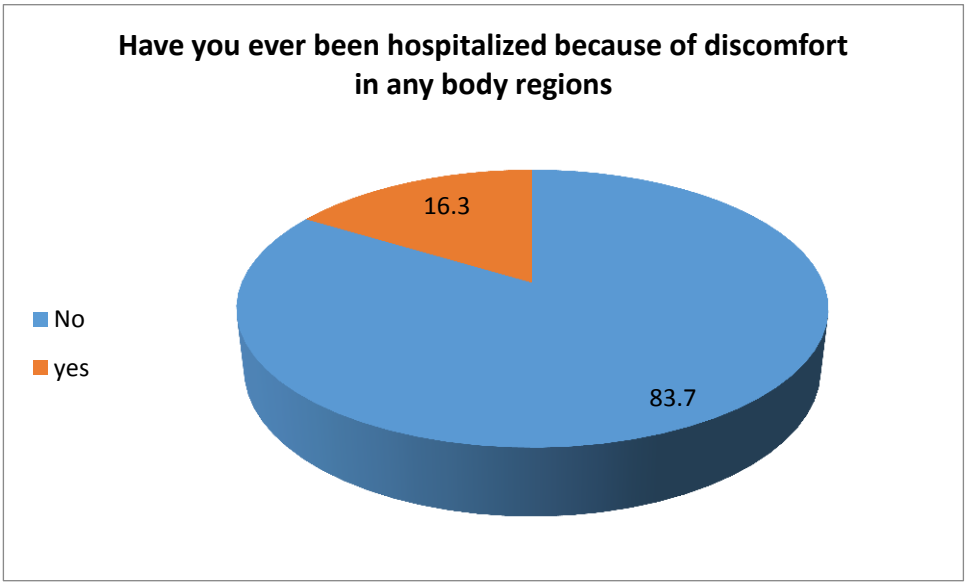
	Frequency	Percent
neck	81	62.8
shoulder	64	49.6
upper back	41	31.8
lower back	71	55.0
elbow	25	19.4
wrist / hand	23	17.8
knee	10	7.8
ankle/foot	15	11.6
Total	129	100%

Analysis of responses to questions regarding hospitalized because of discomfort in any of the body regions

From the responses of the participants 83.7% expressed no response to questions regarding hospitalized because of discomfort in any of the body regions

Compared with 16.3% expressed Yes response to to questions regarding hospitalized because of discomfort in any of the body regions

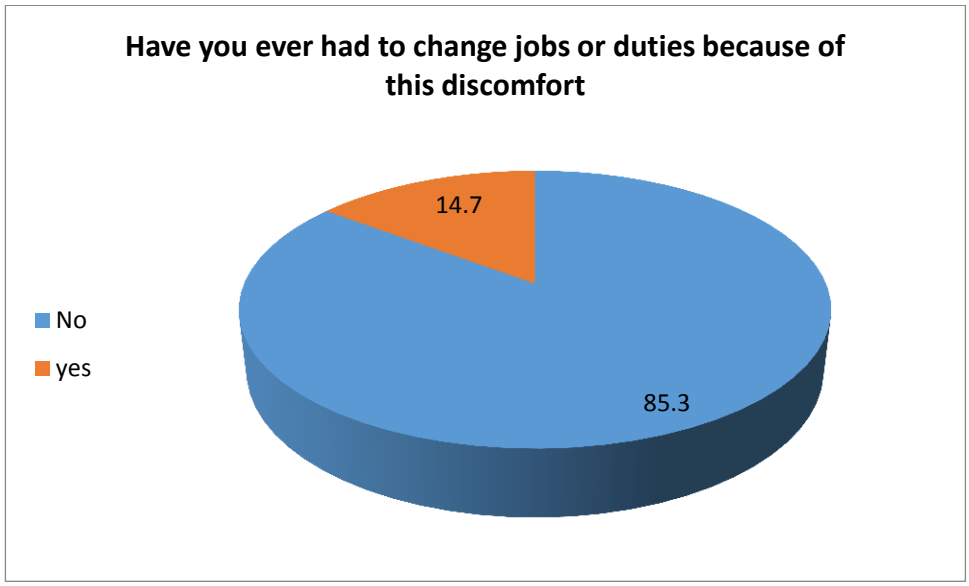
	Frequency	Percent
No	108	83.7
yes	21	16.3
Total	129	100%



Analysis of responses obtained regarding the questions Have you ever had to change jobs or duties because of this discomfort.

Of the 129 participants who responded to this section of the interview, 110 (85.3%) stated they had not change jobs or duties cause of been previously discomfort

Only 19 (14.7%) stated yes they had change jobs or duties cause of been previously discomfort

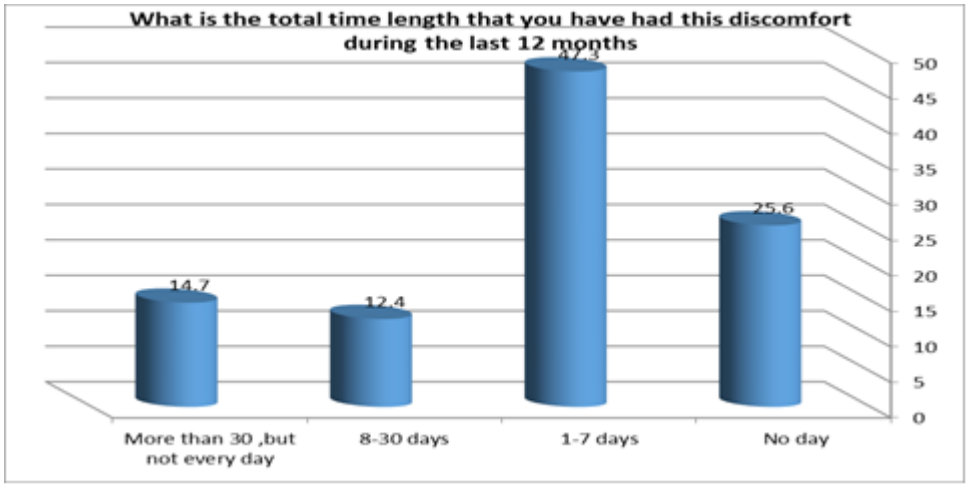


Analysis of responses obtained regarding the question what is the total time length that you have had this discomfort during the last 12 months.

Of the 129 participants who responded to this section of the interview.

47.3% stated, they had discomfort during 1-7 days. And 25.6 stated that the had not any discomfort

The total time length that for discomfort during the last 12 months

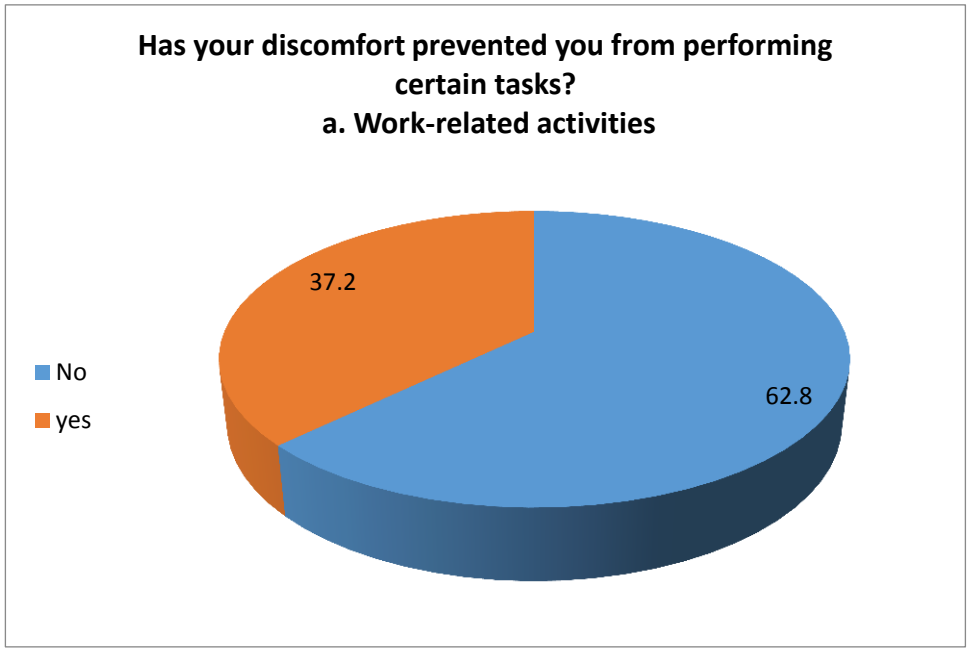


Analysis of responses obtained regarding the questions: has your discomfort prevented you from performing certain tasks? Work-related activities?

Of the 129 participants who responded to this section of the interview.81 (62.8%) participants, stated discomfort did not prevent them from performing certain tasks.

While 48(37.2%) participants stated that discomfort prevented them from performing certain tasks

	Frequency	Percent
No	81	62.8
yes	48	37.2
Total	129	100%

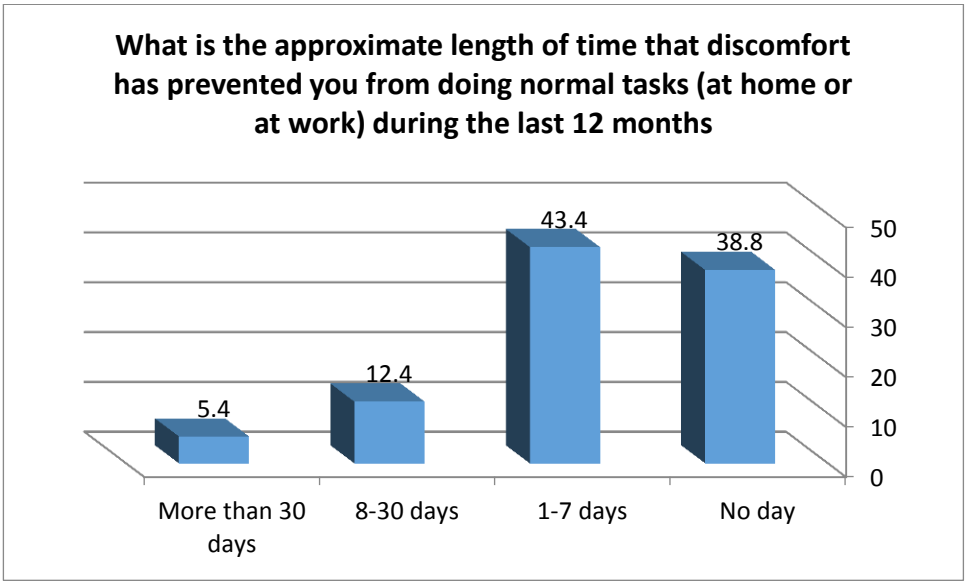


Analysis of responses obtained regarding the question: What is the approximate length of time that discomfort has prevented you from doing normal tasks (at home or at work) during the last 12 months?

Of the 129 participants who responded to this section of the interview. 56(43.4%) participants, stated that discomfort prevented them from doing normal tasks (at home or at work) from 1-7 days

While 5.4% participants stated that discomfort prevented them from doing normal tasks (at home or at work) More than 30 days

	Frequency	Percent
No day	50	38.8
1-7 days	56	43.4
8-30 days	16	12.4
More than 30 days	7	5.4
Total	129	100%



Analysis of responses obtained regarding Analysis of responses obtained regarding the question: have any of these factors contributed to your discomfort?

Of the 129 participants who responded to this section of the interview.

92(71.3%) participants, stated that examining a large number of patients per day contributed to their discomfort

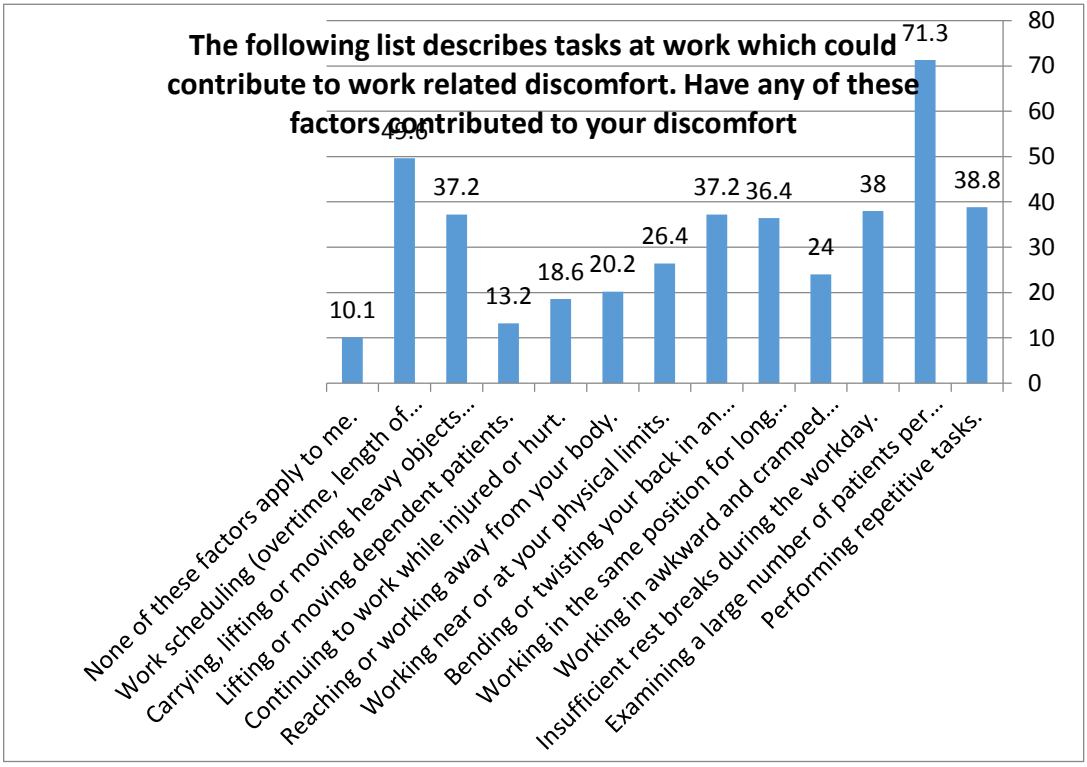
64(49.6%) participants, stated that Work scheduling (overtime, length of workday) contributed to their discomfort

The average percent's of participants stated that the factors contributed to their discomfort were:

- Insufficient rest breaks during the workday
- Working in the same position for long periods (e.g. standing, bent over, sitting).
- Bending or twisting your back in an awkward way.
- Carrying, lifting or moving heavy objects or equipment.

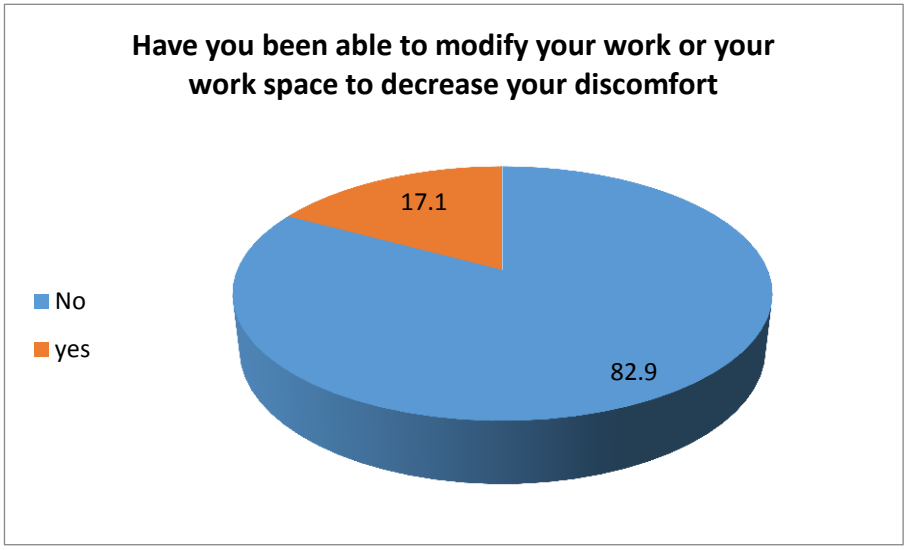
	Frequency	%
Performing repetitive tasks.	50	38.8
Examining a large number of patients per day.	92	71.3
Insufficient rest breaks during the workday.	49	38.0
Working in awkward and cramped positions.	31	24.0
Working in the same position for long periods (e.g. standing, bent over, sitting).	47	36.4
Bending or twisting your back in an awkward way.	48	37.2
Working near or at your physical limits.	34	26.4

	Frequency	%
Reaching or working away from your body.	26	20.2
Continuing to work while injured or hurt.	24	18.6
Lifting or moving dependent patients.	17	13.2
Carrying, lifting or moving heavy objects or equipment.	48	37.2
Work scheduling (overtime, length of workday).	64	49.6
None of these factors apply to me.	13	10.1



Analysis of responses obtained regarding the question: Have you been able to modify your work or your workspace to decrease your discomfort? Of the 129 participants who responded to this section of the interview. Only 22 (17.1%) participants stated that they have you been able to modify your work or your workspace to decrease your discomfort. Which means that there is a limit for changing workspace for Saudi optometrists.

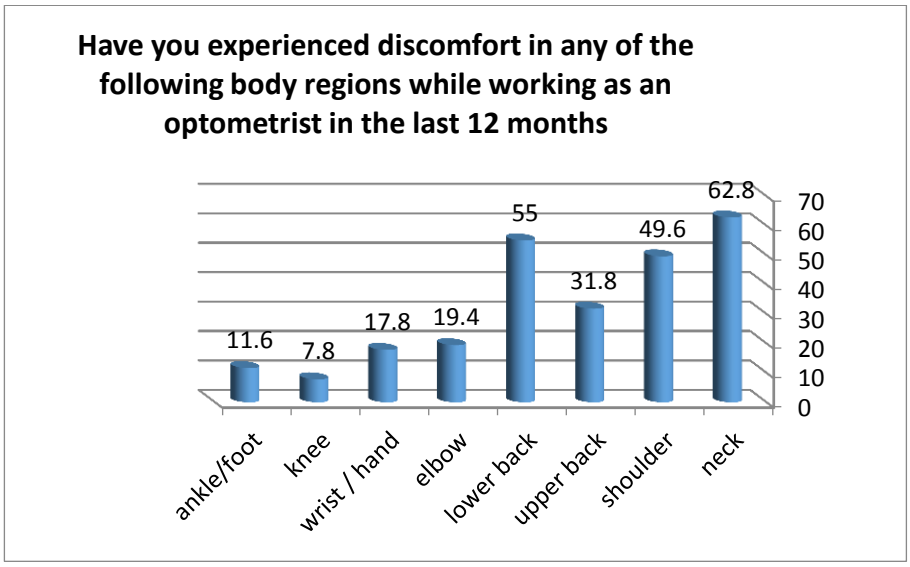
	Frequency	Percent
No	107	82.9
yes	22	17.1
Total	129	100%



It is clear from the above table that 107 of the individuals of the study(optometrist) who represent 82.9% of the whole study sample (optometrist) Have not been able to modify their work or work space to decrease their discomfort and they represent the most of the entire study sample and came in the first position. Whereas, 22 of the individuals of the study (optometrist) who represent 17.1% of the whole study sample(optometrist) Have you been able to modify their work or work space to decrease their discomfort and they are the least in the entire study sample(optometrist) and came in the last position.

DISCUSSION:

The physical load among optometrists seems to put them at risk for the occurrence of musculoskeletal disorders. Muscular imbalance, neuromuscular inhibition, and pain and dysfunction may frequently be observed among optometrists. Repeated unnatural, deviated or inadequate working postures, forceful hand movements, inadequate equipment or workplace designs and inappropriate work patterns are likely to be the particular risk factors. However, MSDs are not an avoidable part of the optometrists' professional lives. (Jennifer Long ,2012)



The high frequency of musculoskeletal disorders probably reflects the specific workload in optometry, with high demands on vision and precision and fine manipulative hand movements and work with unsupported, elevated arms. The symptoms might impair work capacity and the future possibility to stay in the profession. Studies have shown that active leisure and several psychosocial work factors strongly influence good general health and well-being. Physical tasks influence musculoskeletal disorders more than active leisure and psychosocial work factors.

Personal responsibility for managing discomfort assumes an individual has control of their work environment, but this may not always be the case. This paper supports anecdotal reports within ophthalmic literature that work-related physical discomfort is related to specific ophthalmic tasks and techniques. The two most commonly cited ophthalmic tasks involved the phorometer and the slit lamp and were associated with neck, shoulder and back discomfort. Some of the contributing factors to discomfort (for example, inability to adjust equipment) and strategies to reduce discomfort (for example, adjust posture or equipment, reduce patient contact hours) reported in this questionnaire have also been reported in other professions, for example, veterinary science, physical therapy, nursing and dentistry. The results also identify non-ophthalmic factors contributing to discomfort that have not been described previously, for example, room and equipment design and equipment supply and maintenance. Why do individuals continue to work in conditions that contribute to personal discomfort? Although the answer to this specific question requires further investigation, it is clear from the results that discomfort is not experienced by an isolated few. There may be response bias associated with the survey in that optometrists who experience work-related discomfort might have been more motivated to participate in this anonymous questionnaire.

Nevertheless, the total number of participants who reported work-related discomfort (n = 339) is likely to be a lower estimate of the total number of Saudis optometrists; who actually experience discomfort. It is possible that some optometrists experience discomfort because they have not recognized a link between their discomfort and specific work tasks or because they have been unable to determine a practical solution for their problem.

This is not necessarily a poor reflection on the individual but might reflect the fact that solutions to problems are not always self-evident and might require a strategic approach than trial and error or 'common sense'.

Identifying the best solution for discomfort might also be complicated by variations in personal physical stature, design of equipment and room arrangement. This might explain apparent contradictions in the reported strategies (for example, some practitioners advocate sitting during an eye examination while others prefer standing) and the debate within the ophthalmic literature as to whether it is better to sit or to stand for refraction or to alternate sitting and standing

Investigations within other healthcare professions suggest that work-related discomfort is best addressed using a multifactorial approach and that there is unlikely to be a single solution that is suitable for all practitioners. This is consistent with previous findings that removing the two independent risk factors for severe discomfort in optometrists (that is, performing repetitive tasks and continuing to work while injured) will not totally eliminate the risk of discomfort but only reduce the disease load in optometrists by 28 per cent. The variety of strategies described by participants in the present study supports the idea that work-related discomfort is multifactorial, while the barriers to improving comfort described by participants indicate that work-related discomfort might need to be addressed at different levels within the profession, for example, equipment design, consultation room design, practice management, as well as by individuals. The results presented in the present paper provide a useful starting point for implementing remedial action at these various levels.

It is alarming to discover that equipment supply and maintenance, and equipment and room design were reported as issues in some workplaces and that some participants were unable to make basic changes to improve their own comfort. Some participants reported that they manage their own discomfort by delegating tasks to staff or other family members.

This raises the question whether there are inherent dangers performing some tasks; and whether staff or family members are at risk of sustaining a similar injury. The risk management process recommends effective communication and consultation with stakeholders (for example, the workers) and that any interventions to control risk should be monitored and reviewed to ensure that subsequent risks do not arise

(including risks to other people). Further evaluation on a case-by-case basis (for example, interviews and observations) would be necessary to determine if individual practices comply with occupational health and safety legislation and to develop strategies to encourage compliance within these workplaces.

The results also highlight the fact that new technology is not necessarily a panacea for work-related discomfort but needs to be monitored and reviewed on an ongoing basis, just as for any other intervention. For example, several participants report that since introducing alternative technology to reduce work-related discomfort, they now experience discomfort in other body regions. Desktop computers in the consultation room were reported as contributing factors to discomfort, indicating that some optometrists might not have set up their own computer workstations correctly for physical and visual comfort. Attending to this issue provides two opportunities for optometrists. First, workstation arrangements that allow neutral postures can reduce personal risk of work-related discomfort; it also allows practitioners to demonstrate that they are able to apply basic ergonomic principles (which is a core competency for optometric practice in Australia), particularly if these practitioners give advice to their patients on vision and visual ergonomics for computer use.

This questionnaire used an exploratory approach (open-ended questions) to identify factors contributing to discomfort and strategies adopted for managing discomfort. Subsequently, non-ophthalmic factors (for example, equipment maintenance issues) were described and these issues have not been reported previously in ophthalmic literature. The use of open-ended questions meant that some participants did not always provide comprehensive explanations, which hampered categorization of the data. For example, it is unclear from the responses whether the response 'slit lamp' includes fundoscopy and gonioscopy or refers only to examination of the anterior eye. Despite this, the qualitative results indicate that use of the slit lamp, whether this includes fundoscopy and gonioscopy, is a contributing factor to neck, back and upper limb discomfort. This is consistent with predictions reported by Oduntun and Dhimitri. It is possible that slit lamp examination and refraction were reported most frequently because they are the primary tasks performed by optometrists during a routine eye examination. Unlike other studies, this questionnaire did not include quantitative measures to assess the relative contribution of factors to work-related discomfort (for example, asking participants to rate the contribution of individual tasks and procedures on a Likert scale), since including such questions would have increased the length of the questionnaire and might have discouraged participation. Although quantitative information is useful for risk management (consequence-likelihood) matrices, these analyses are subjective and it has been argued that it might be a better use of resources to identify and control hazards rather than attempting to quantify and assess risks. Psychosocial factors (for example, workload, work satisfaction, job design) can contribute to work-related discomfort Some

participants alluded to these issues, which have been identified previously as risk factors for discomfort (for example, performing more than 11 consultations per day, not being self-employed). It is also possible that non-work-related injuries could be contributing to discomfort in some individuals. Other research methods, such as interviews with optometrists, are likely to be a better research method for exploring these issues and therefore these topics will be the subject of further investigation.

This study needs to be repeated with a long-term follow-up to see how such professionals cope with such a challenge. We need to devise primary as well as secondary prevention strategies to decrease the prevalence of WRMDs among optometrists' professionals so that can effectively take care of patient and focus on their work.

CONCLUSION

Individual Saudi optometrists can assume some personal responsibility for posture when performing clinical procedures. Since individuals may only have limited control over workload or equipment and consultation room design, there also needs to be greater awareness amongst Saudi optometrists of the impact of these factors on work-related discomfort.

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