Work-related discomfort in the optometry profession – whose responsibility?

Jennifer Long1, Robin Burgess-Limerick2, and Fiona Stapleton1

1 School of Optometry and Vision Science, University of New South Wales, Australia
2 Minerals Industry Safety and Health Centre, Sustainable Minerals Institute, The University of Queensland, Australia

Abstract

Background: Optometrists generally work in small business environments. Work-related discomfort is often viewed as a personal responsibility which can be managed by adjusting posture or equipment. Aim: The purpose of this paper is to explore the contributing factors for discomfort in optometrists and discuss whether the management of discomfort is the responsibility of individual optometrists or the employer. Method: Sixty optometrists (n=47 with work-related discomfort) were interviewed by telephone and asked questions about their control of the work environment and work factors contributing to discomfort. Data related to discomfort were collated and thematically analysed. Data related to control of the work environment were subject to qualitative and quantitative analysis. Results: Four factors contributing to discomfort were identified: sustained postures, awkward postures, inability to adjust equipment and inadequate space. Self-employed participants were more likely to report that they had input into the choice of equipment and furnishings in their primary work practice (p<0.001) while 18 participants (all not self-employed) reported no input. There were 27 participants (45%) who perceived they had full control over their pace of work. Control was achieved by good communication with other staff members and appointment book structure. Lack of control was related to expectations to perform unscheduled consultations. Conclusion: Individual 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 a greater awareness amongst employers of the impact of these factors on work-related discomfort.

© Long et al; Licensee HFESA Inc.

Background

Work-related discomfort falls under the auspices of Australian Work Health Safety (WHS) legislation. As such, responsibility for managing this risk could reasonably be apportioned to employers (provide a workplace which is safe and comfortable), equipment manufacturers and suppliers (provide equipment which is safe and comfortable) and to employees and the self-employed (take reasonable care for own health and safety)(1).

Ophthalmic publications discussing work-related discomfort largely reinforce the personal responsibility view e.g. advice is given about appropriate postures (2, 3) or exercises which can be performed throughout the working day (4, 5). In a questionnaire issued to Australian optometrists in 2008 (n=416, 25% response rate), adjusting posture was the strategy most commonly reported to minimise discomfort (6). Subsequent interviews with 47 of these optometrists revealed that work-related discomfort was frequently viewed as a personal issue e.g. treatment was accessed in non-work time and funded personally and/or with private health insurance (unpublished data).

Personal responsibility for managing discomfort assumes an individual has control of their work environment, but this may not always be the case. In Australia, clinical optometrists predominantly work in private practice and may work in independent practices (i.e. their practices are owned by optometrists) or non-independent practices (i.e. the practice is part of a franchise or is owned by a dispensing company). It is estimated that independent optical outlets account for 62% of all optical outlets in Australia (7). Optometry workforce estimates in 2005 showed a 5% decrease in self-employment over the period 1995-2005 and estimated that that there were 54% optometrists who were self-employed in 2005 (8). Non-self-employed optometrists may work as employees or as locums (i.e. work on short term contracts).

In the 2008 questionnaire to Australian optometrists, univariate analysis showed that employee and locum optometrists were more likely to report work-related discomfort (9) and multivariate analysis showed that any discomfort was associated with performing more than 11 consultations per day. Barriers to improving comfort included room and equipment design, poor maintenance of equipment and non-supply of suitable equipment or furniture (6).

The purpose of this paper is to report data collected from interviews with optometrists exploring how much control optometrists have over their work environment and why optometrists experience discomfort with common clinical tasks. This will help answer the question: whose responsibility is work-related discomfort?

Corresponding author: Jennifer Long. Email – j.long@unsw.edu.au
Method

An online questionnaire about work-related discomfort was sent to Australian optometrists in 2008 and achieved a 25% response rate (n= 416). Contact details were provided by 120 optometrists to participate in future stages of the study. They were contacted by email or post and invited to participate in a 30 minute telephone or face-to-face interview, of which 60 optometrists agreed to participate. Telephone and face-to-face interviews were conducted with these optometrists between August 2009 and March 2010 and covered a range of topics including experience of work-related discomfort, job satisfaction and ergonomics. Participants practiced optometry in all states and territories of Australia except for the Northern Territory. All optometrists who positively responded to these invitations were interviewed.

All 60 interview participants were asked questions about their control of the work environment. Only those with self-reported discomfort (n=47) were asked questions about their discomfort. The interview questions and analysis methods used within this paper are shown in Table 1.

Results

The demographics of the 60 interview participants are given in Table 2. Of these, 47 participants reported work-related discomfort and this was associated with using the phoropter (n=25) (Figure 1), slit lamp (n=18) (Figure 2), ophthalmoscope (n=10) (Figure 3) and computer (n=8).

Table 1. Interview questions and analysis methods

<table>
<thead>
<tr>
<th>Participants</th>
<th>Interview questions</th>
<th>Analysis</th>
</tr>
</thead>
</table>
| Participants with self-reported discomfort (n=47) | Experience of discomfort  
Over the past 12 months have you experienced work-related discomfort in any of the following body regions?  
Neck, shoulder, upper back, lower back, elbow/arm, wrist/hand, knee/leg, ankle/foot  
Participants were then asked the following questions for each body region experiencing discomfort:  
• Are there any particular optometry tasks that make this discomfort worse? Please describe  
• Are there any strategies that you adopt to minimise or reduce this discomfort? Please describe.  
• Have you tried any strategies that don’t work? Please describe | Previous results indicate that the 4 principle tasks associated with discomfort are using the phoropter, slit lamp, ophthalmoscope and computer (6).  
The data relating to these tasks were collated and thematically analysed. |
| All participants (n=60) | Control over work environment  
How much input did you have into the choice of equipment and furnishing in the practice where you work?  
How much control do you have over your pace of work e.g., length of appointments, appointment scheduling, lunch and other comfort breaks? | Coding of responses into themes and tabulation according to frequency  
Binary outcome measure, where:  
• "no input" = 0 and "any input" = 1  
• "no control" = 0 and "any control" = 1  
Chi-squared analysis was conducted to establish interactions between the demographic factors and the binary outcome measures. Statistical significance was set at p = 0.05. |

Table 2. Demographic factors and control of work environment

<table>
<thead>
<tr>
<th>Demographic factors</th>
<th>All participants</th>
<th>With self-reported discomfort</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Did you have input into choice of equipment and furnishings?</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>Yes</td>
</tr>
<tr>
<td>TOTAL</td>
<td>60</td>
<td>18</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>26</td>
<td>5</td>
</tr>
<tr>
<td>Female</td>
<td>34</td>
<td>13</td>
</tr>
<tr>
<td>Report Discomfort</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>47</td>
<td>13</td>
</tr>
<tr>
<td>No</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>Years practicing as optometrist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;15</td>
<td>19</td>
<td>7</td>
</tr>
<tr>
<td>15+</td>
<td>41</td>
<td>11</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-employed</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>Not self employed</td>
<td>30</td>
<td>18</td>
</tr>
<tr>
<td>Practice mode</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independent</td>
<td>40</td>
<td>9</td>
</tr>
<tr>
<td>Not-independent</td>
<td>20</td>
<td>9</td>
</tr>
<tr>
<td>Practice location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Urban</td>
<td>44</td>
<td>13</td>
</tr>
<tr>
<td>Both</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

# p < 0.001
Postural strategies adopted by interview participants to reduce discomfort when using the phoropter include reducing standing so the arms are not elevated (n=3), sitting on a chair with back support (n=3), adjusting the patient position so the arms are not extended (n=3), facing the patient so the arms are not abducted (n=2), alternating sitting and standing (n=1) and sitting on a higher chair (n=1). Alternating between standing on the right and left side of the patient was cited as a strategy by 3 interview participants, while others reported that this strategy introduced more discomfort or became less efficient. Other strategies cited include minimising the time spent using the phoropter (n=1), working less hours (n=1) and taking rest breaks between patients (n=3).

Although commercial products are available to improve comfort when performing slit lamp fundoscopy, only one participant reported that they use a metal clip which holds the fundoscopy lens in place, and one participant reported that they have considered using an elbow support but has not pursued it further.

Awkward postures were reported when performing slit lamp examination (e.g. “When there is a larger person in the chair, you can’t sit facing them, you need to turn your legs to the side a little bit”). One participant who reported back discomfort purposefully sat with his legs to the side out of modesty, while three participants described improved comfort since they stopped sitting in a “modesty pose”. One participant reported that her comfort is better now that she wears trousers instead of a skirt.

**Experience of discomfort**

Four themes emerged as contributing factors to discomfort: sustained postures, awkward postures, inability to adjust equipment and insufficient space. Sustained postures and to a certain extent, awkward postures, were associated with clinical tasks and the interaction between the optometrist and the patient. These were factors which participants reported they had some control over and are described in this paper as “task factors”. Inability to adjust equipment and insufficient space within the consultation room were reported as contributing factors to awkward postures. These were factors over which participants did not always have control, and are described in this paper as “equipment design” and “consultation room design”.

There were mixed reports about the benefits of personal strategies to reduce discomfort e.g., sport and exercise were cited as beneficial 23 times and non-beneficial (or increased discomfort) 4 times. Medication was not viewed favourably as a strategy for reducing discomfort associated with using the slit lamp (n=4), ophthalmoscope (n=2) or phoropter (n=3) as it was reported as ineffective or had adverse side effects e.g. increased blood pressure.

**Task factors**

Sustained postures were associated with using the phoropter and the slit lamp. For example:

- Having an elevated arm to reach the dials on the phoropter (n=5) especially if patients were slow decision makers when reading from the letter chart (n=2).
- Extending one arm to hold a fundoscopy lens (n=9) (Figure 2), epilate eyelashes or perform foreign body removal (n=4) when using the slit lamp.

**Equipment design**

The chair and stand is a key item of equipment in an optometry consultation room. The patient chair height is adjustable and the stand has items of equipment mounted on it for ease of use. Inadequate space next to the chair and stand was cited as a contributing factor for discomfort when using the phoropter and ophthalmoscope (e.g., compare the limited space for the optometrist to stand in Figure 1 with that in Figure 3). The consequences of inadequate space include awkward postures, e.g. can only work from one side of the patient (n=7), need to reach across the patient (n=7) or twist to the right for clinical tasks (n=4).

Inability to sufficiently adjust the height of the patient chair or their own chair was cited as a contributing factor for using the:

- phoropter (n=3) e.g. “I don’t stand because I am too tall, so I sit and reach up”
- slit lamp (n=6) e.g. “I can’t sit on the chair because the slit lamp is too high…but I can’t stand up properly either”
- ophthalmoscope e.g. when examining smaller patients and children (n=4) or when working at external clinics where the patient sits on a conventional (non-adjustable) chair (n=3).

Six participants described how they attempt to adjust their own chair or use cushions to improve their comfort while using the slit lamp. Unsuccessful strategies reported include squatting and sitting on one leg. Three participants reported that they keep the patient as high as possible for ophthalmoscopy. One participant has purchased a bar...
stool for patients to sit on at external clinics, while another participant has ceased performing domiciliary visits “because it was too hard on my back”.

**Consultation room design**

The location of the projector letter chart relative to the patient chair was an issue for 2 participants when using the phoropter (“My head gets in the way of the patient seeing the letter chart so I always duck over to the right hand side”). Participants also described how the computer for recording examination data is oriented away from the patient (“I have to turn my head to look over my right shoulder to talk to the patients.” (n=3) or is installed on a workstation too low to use while standing (n=1). Many participants reported space limitations within the consultation room which prevented them rearranging their workstation or replacing furniture (n=2). One participant did not consider purchasing new furniture a priority even though it caused discomfort, while another participant perceived recording information as a transient activity and therefore not essential to be seated correctly. One participant used predictive software which minimises typing by recognising commonly used words and phrases (n=1) while another who was unable to implement change within the consultation room described how she handwrites information during the consultation and then enters the data into the computer later in the day.

**Control over the work environment**

**Choice of equipment and furnishings**

There were 42 participants (70%) who reported that they have had input into the choice of equipment and furnishings in their primary work practice (Table 2). Self-employed optometrists were more likely to report that they had input ($\chi^2 = 25.7$, df=1 $p<0.001$). The amount of input into choice of equipment and furnishings varied from 100% (n = 19 self-employed, n = 2 employees) to minimal e.g. small items of equipment and furniture. There were 18 participants who reported no input into the choice of equipment and furnishings where they work (n = 14 employees, n = 4 locums) although one participant said that they were asked their opinion after equipment was installed. Two locum optometrists reported that they take bags with small items of equipment to their workplace (e.g. reading cards, patient literature) in the event that these items are not supplied.

**Control over pace of work**

There were 45% participants (n=27) who perceived that they had full control over their pace of work. This was achieved by specifying and enforcing appointment length and break times (n=19, 32%) or structuring the appointment book to allow time to “catch up” after complex patient presentations (n=4), to see emergency patients (n=3) or complete administrative tasks (n=2). There were 4 locums who reported that they stipulate appointment length and break times in their employment contracts; one reported that they have refused to work when conditions were not met.

Of those who perceived that they did not have full control, 12 participants (20%) reported that they could restructure the appointment book but chose not to do so. Reasons given for lack of control over pace of work include expectations of management to consult with a set number of patients per day irrespective of the complexity of clinical presentation (n=16), expectations of patients to be seen immediately (n=6) and emergency referrals from general practitioners and pharmacists (n=5). Lack of control was particularly an issue for 5 of the 7 optometrists who work at external clinics (e.g. “One nursing home tricked me. They said they had 3 or 4 lined up but I ended up with 17 in one afternoon. By the end of that my back was so sore I could hardly walk.”). There were 6 participants (10%) who reported that sometimes they cannot take breaks, even if breaks are rostered into the appointment book and 5 participants who chose to forgo structured breaks in favour of completing paperwork or seeing additional patients. One participant reported insufficient time to complete their work within the allocated appointment times. Chi-square analysis did not show any significant interactions between the demographic factors and perceived control over pace of work (Table 2).

**Discussion and conclusions**

These results show that optometrists take personal responsibility for discomfort by making postural adjustments, performing exercises, using medication and adjusting their work hours or work tasks. Some contributing factors to discomfort e.g. sustained postures, may be amenable to modification by individuals, so it is appropriate that ophthalmic publications provide advice to optometrists on these matters.

Equipment and consultation room design are also contributing factors to discomfort, but control of these aspects by optometrists may be limited, especially by employee and locum optometrists. Since there is a trend away from self-employment within the optometry profession, there needs to be a greater awareness among employers, purchasers and designers of how these factors affect the comfort and efficiency of optometrists.

The WHS legislation stipulates that the self-employed have a responsibility to ensure personal health and safety, but this was not fully embraced by all participants. The view that personal comfort is a low priority is similar to the findings from other parts of this investigation e.g. continuing to work while injured is a risk factor for severe discomfort (9) and there may be personal incentives to continue to work if one is self-employed (unpublished data). Although it is reasonable to legislate in this way, optometry is a service industry operating in a small business environment. This means that self-employed optometrists may not have total control over their work, especially if there are expectations from external sources to provide additional consultations. This is an issue which requires more open discussion within the profession.

Some participants enjoyed the challenge of seeing a large number of patients per day and did not experience work-related discomfort. It is possible that combinations of factors may contribute to discomfort e.g. performing more than 11 consultations per day (9) AND adopting awkward postures. This requires further investigation.

There were two limitations of this study. Firstly, there was response bias in that the participants in this study chose to
participate and they might not represent the experience of all optometrists in Australia. There was a higher proportion of females (57%) and participants older than 41 years (58%) in this study compared to estimates for the optometric workforce in 2009 (45% female and 50% aged at least 40 years (10)). The proportion of self-employed (50%) is comparable to projections based on past trends (5% decrease in self-employment per decade, most recent estimate of self-employment is 54% in 2005) (8).

The second limitation is that the interviews adopted an exploratory approach and only those with discomfort were asked to name strategies which they have used to reduce discomfort. Now that the factors contributing to discomfort in optometrists are better understood, it is possible to investigate how those without discomfort remain pain-free. This could be achieved by surveying a broader sample of optometrists and using targeted questions related to specific tasks, equipment or postures.

There are many contributing factors to work-related discomfort in optometrists. Consistent with Australian WHS legislation, the responsibility for this issue cannot be assigned solely to individuals, but needs to be addressed by all stakeholders, including employers, suppliers and designers.

References


