

ORIGINAL ARTICLE

**Task Sharing in the Eye Care Workforce: Screening, Detection and Management of Diabetic Retinopathy in Pakistan. A Case Study.**

**Running title: Task sharing for DR**

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## **Abstract**

**Purpose:** Diabetic retinopathy (DR) is a preventable cause of vision loss. Reducing vision loss due to DR and providing access to eye care services for people with diabetes has been severely constrained by a shortage in the number of ophthalmologists. This study aimed to explore the potential for task sharing in the eye care workforce for screening, detection and management of DR.

**Methods:** Using purposive sampling 24 participants were recruited from four selected hospitals in two provinces in Pakistan. Face-to-face interviews were conducted to explore the potential for task sharing in DR management.

**Results:** Amongst 24 participants recruited, 22 (91.7%) including administrators (n=3), ophthalmologists (n=10), optometrists (n=3), mid-level eye care workers (n=4) and endocrinologist (2) participated in the study. All participants indicated the need for an organized screening program for DR detection through task sharing. Participants suggested that people with diabetes can be sent directly to an optometrist for initial eye exams, rather than making them wait to be examined by an ophthalmologist. Factors favouring task sharing included the name task sharing rather than task shifting and a high demand for eye

care services. Major barriers to implementation of task sharing included the lack of a trained eye care workforce in the health care system, and the lack of coordination amongst health professionals and policy makers.

**Conclusion:** Participants were accepting task sharing approach and believed that task sharing could improve access to eye care services for people with diabetes and better utilize the services of eye and health care providers.

**Key Words:** Task sharing; Diabetes; Diabetic retinopathy; Pakistan.

### **Introduction**

Diabetic retinopathy (DR) is an ocular complication of diabetes and a preventable cause of vision loss. One out of every 52 visually impaired persons had visual impairment due to DR and one out of every 39 blind people had blindness due to DR<sup>1</sup>. Vision loss is preventable in more than 90 % of people with diabetes if DR is detected and treated in time<sup>2</sup>. The shortage in the number of ophthalmologists in many countries is a major barrier to the optimum and timely management of DR<sup>3-6</sup>.

The prevalence of diabetes is increasing in the world and particularly in the undeveloped countries<sup>1, 7-9</sup>. Between 2010 and 2030, the prevalence of diabetes is expected to increase approximately 69% in undeveloped countries and 20% in developed countries<sup>8</sup>. India is expected to have the highest number of people with diabetes, increasing from 50.8 million in 2010 to 87 million in 2030<sup>8</sup>. In Pakistan, numbers are expected to rise from 7.1 million in

2010 to 11.9 million in 2030<sup>8</sup>. In Cambodia, the number of people living with Type 2 diabetes is expected to rise from 145,000 in 2008 to 264,000 by 2028, an 82 % increase<sup>10</sup>. All people with diabetes are at risk of developing DR, therefore vision loss due to DR is also expected to increase over the next two decades<sup>1</sup>, markedly increasing the demand on the health workforce in all affected countries. Strategies to prevent vision loss due to DR are urgently needed.

The shortage in human resources severely limits access to eye health services and is being addressed by a number of strategies including the Vision 2020 program<sup>11, 12</sup>. Task sharing<sup>13</sup> is proposed as an approach to meet the widening gap between the need and supply of eye care workers to manage eye care services for people with diabetes<sup>13</sup>. This case study aimed to explore the feasibility of task sharing in eye care delivery for people with diabetes in Pakistan and the potential for implication in other low resource countries.

## **Methods**

Using purposive sampling 22 participants out of the 96 participants who took part in the first quantitative phase of this research<sup>13</sup> were interviewed for the subsequent qualitative phase. Detail methods for the first phase is reported elsewhere<sup>13</sup>.

This research was concerned with exploring all perspectives on task sharing for DR management, it was important to explore the views of key policy makers and providers of eye care services specifically to people with diabetes. Not all ophthalmologists and

optometrists working in eye care facilities in Pakistan undertake eye examinations of people with diabetes. Therefore, heads of the selected departments were consulted about potential participants. Participants interviewed in this study included:

1. Doctors including ophthalmologists and endocrinologists. Amongst the ophthalmologists, three were at the post of administrators as well.
2. Optometrists.
3. Mid-level eye care workers including orthoptists, refractionists and ophthalmic technicians.

Field visits to conduct interviews also included a tour of the facilities at each venue, with the opportunity to observe the delivery of eye care services. This provided insight into the roles of different cadres in providing eye care services.

The flexible interview guide included open-ended questions exploring the following themes: eye care services for people with diabetes; understanding of task sharing; examples of task sharing; policy and guidelines for task sharing and changes needed; barriers to task sharing; HR capacity building through task sharing and the training needed. During the course of conversations interesting ideas were noted that provided the bases for further inquiry.

Face-to-face interviews were conducted in English by the author. Interviews were audio recorded (H2 Handy Recorder, Zoom Corporation) and later transcribed verbatim into a separate MS Word document for each participant. Transcription reliability and accuracy

were checked in a random sample of transcripts by an independent researcher. The transcripts were then uploaded to NVivo software (version 11, QSR International, Doncaster, Australia) for data management and analysis through the node-creation technique.

Ethics approval was obtained from the Human Research and Ethics Committee of the Royal Victorian Eye and Ear Hospital, Australia. All participants were informed about the study via email prior to site visits, and then gave written informed consent to their involvement in the study.

## **Results**

Amongst the 24 participants recruited for interviews, two ophthalmologists could not manage times for interviews and hence 22 (91.7%) participants including 17 (77%) males participated in the study. Table 1 shows demographics of participants.

(Table 1 here)

The interviews explored the following themes: knowledge and understanding of DR and task sharing; existing and potential task sharing in DR; need for laws and policies for task sharing; resources for DR management; barriers to Implementation of task sharing; potential roles of different cadres, NGOs and government in task sharing; continuing medical education (CME) and supervision.

### **Theme 1: Knowledge and Understanding of DR and Task Sharing**

The interviewer inquired about the overall situation of DR screening and management. At first, the participants were asked to state what comes to their mind when they heard the term “diabetic retinopathy”. The majority of the responses were related to loss of vision (n=6) and DR being one of the causes of avoidable blindness (n=5). Other responses included poor control of diabetes (n=3) and urgent need of treatment to prevent vision loss (n=2). Fifteen (68%) participants noted that there was no organized screening program for DR detection in their facility or locality. On the other hand, three ophthalmologists noted the presence of some community-based screening programs in collaboration with the Fred Hollows Foundation in targeted areas.

Eleven of the 22 participants used the term ‘co-management strategy’ to define task sharing. One ophthalmologist and an endocrinologist believed that sustainable screening coverage was not possible without a co-management strategy, where the potential roles of all eye and health care professionals are fully realized and utilized.

The responses highlighted two important potential benefits of task sharing in eye care delivery. First, greater screening coverage and second the utilization of the capabilities and potential of optometrists and mid-level eye care workers in DR screening and care. An ophthalmologist who is also an administrator in a tertiary eye care hospital stated:

*“Instead of ten patients, twenty patients will be examined in task sharing model and this will be very important to me. Secondly if we train optometrists and mid-level cadre and we do not give them tasks then that cadre will be lost*

*and if we do not provide them opportunity to do then there is no point to train them.”*

## **Theme 2: Existing and Potential Task Sharing in DR**

The interviewer explored different areas of health care in which task sharing has been successfully implemented in Pakistan and then inquired about the current role and implementation of task sharing in DR screening, care and management. Eight participants, including three ophthalmologists and one administrator who is also a practicing ophthalmologist, provided the example of ‘mother and child health care’ in which lady health workers (LHWs) play a significant role. In relation to the role expansion of LHWs, a senior ophthalmologist mentioned:

*“Our community ophthalmologists train LHWs how to identify any abnormality in eyes. So, during their house-to-house visits in the community, they identify people with any vision related problems and specifically with cataract and refer these patients to ophthalmologists.”*

Four ophthalmologists, two optometrists and an orthoptists noted the role of orthoptists in squint assessment which significantly reduced the load on paediatric ophthalmologists.

Task sharing was identified by all cadres in this study as an important strategy that can be used to address eye health needs of people with diabetes to prevent vision loss. The interviewees indicated that the procedures of patient management and follow-up were mainly undertaken by the ophthalmologists. Thirteen participants (59%) said that the mid-

level workers currently have no significant role in patient screening, referral and follow-up. They mentioned that people with diabetes have to wait for the ophthalmologists, along with other patients with eye problems in the ophthalmology department. They proposed that these patients could be sent directly to the optometrists, who can detect DR via a non-mydratic camera in the ophthalmology department. Optometrists could provide follow-up to those with no signs of DR and only refer patients to ophthalmologists who need DR management. One ophthalmologist and an optometrist suggested role expansion for optometrists for glaucoma screening as well, which could also ease the workload for ophthalmologists.

### **Theme 3: Need for Laws and Policies for Task Sharing**

When asked about the need for laws and policies in eye care facilities for task sharing to protect rights of eye and health care workers, the responses were divided. Ten (45%) participants believed that there is no need for laws about task sharing in DR management, but simple guidelines and reinforcement strategies are required. On the other hand, 12 (55%) participants believed that without proper guidelines and protocols, it is impossible to implement and sustain the task sharing framework for DR. An ophthalmologist stated:

*“Without a protocol, without national guidelines and without health policy no active program can take place.”*

Another aspect of policy formulation covered in the interview was patients' rights in the task sharing model. Only six participants, including three ophthalmologists, said that there is need for laws and policies to safeguard patients' rights. The remaining participants indicated that task sharing is supposed to take place under the supervision of ophthalmologists and therefore such policies were either not needed, or might hinder the implementation of task sharing.

#### **Theme 4: Resources for DR Management**

A number of participants stated the need for more funds and more qualified personnel. Hospitals should have adequate facilities where newly trained mid-level workers can practice their skills under supervision. Some of the participants illustrated:

*"We need more trained eye care workforce for taking regular follow-up eye examinations for people with diabetes for timely referral and management of DR."* (Optometrist)

*"We have facilities for in-door patients. For screening DR in community, we need financial resources and the health workforce".* (Ophthalmologist)

#### **Theme 5: Barriers to Implementation of Task Sharing**

The interviewer inquired about challenges and barriers that could hinder the adoption of task sharing in the health care system in low resource countries.

*Lack of knowledge about task sharing implementation*

An ophthalmologist noted that there was a lack of knowledge about how the roles of each cadre would be defined under a task sharing framework, and whether the new roles would be fixed or vary according to the availability of ophthalmologists, optometrists and mid-level eye care workers in different areas. Some ophthalmologists noted that there was no national or state level guidance on task sharing and the need for task sharing was not discussed in Pakistan at the conferences of ophthalmologists, optometrists and other doctors.

#### *Reluctance to change*

There is the possibility that ophthalmologists might be reluctant to release part of their role in DR screening and management to optometrists. This problem was highlighted during interviews when 21 out of the 22 participants suggested a preference for task sharing rather than task shifting. One ophthalmologist working in an administrative position said:

*“Ophthalmologists are reluctant towards task shifting. They think that optometrists will take their tasks and will overstep when we assign their tasks to optometrists. So some of them are not in favour of optometry program in the country”.*

He also stated:

*“When we consider task sharing instead of task shifting, tension of ophthalmologists is released. In task sharing the ophthalmologists will think that they are sharing their load and not their roles.”*

#### *Employment and remuneration issues*

The interviews and site visits indicated that there is a problem of unemployment in Pakistan, particularly for optometrists. There are very limited seats for optometrists in public hospitals and many optometrists agree to work at lower wages in order to secure their jobs, despite knowing that they are paid inadequately. This issue of under-employment was identified by three optometrists, three ophthalmologists and an endocrinologist.

#### *System barriers*

Three ophthalmologists, two optometrists and a refractionist used the term ‘system barrier’ to highlight the lack of interest and support from policy makers in implementing task sharing. Two ophthalmologists stated that if the government officials and parliament members who shape healthcare and eye care standards are unaware of the benefits and process of implementing task sharing, it is unlikely the framework could become well established at the ground-level.

The interviews identified factors favouring task sharing and barriers in implementation of task sharing. These are summarized in Table 2.

(Table 2 here)

## **Theme 6: Potential Roles of Different Cadres, NGOs and Government in Task Sharing**

### *Potential roles of optometrists and other cadres*

Fifteen (68%) participants stated that optometrists and four participants suggested refractionists could play a key role in DR screening and patient management by providing timely referral to ophthalmologists.

*“Optometrists can play active role. For instance, many people with decreased vision visit optometrists for refraction and optometrists can do screening to detect DR and provide a very active referral chain”. (Ophthalmologist)*

*“Refractionists and ophthalmic technicians should share tasks with optometrists. They can be taught how to identify people with diabetes and to provide them health education and refer those with vision problems”.*

*(Ophthalmologist)*

Similarly, participants emphasised the importance of LHWs in promoting community-based awareness about health, diabetes and its complications. LHWs could also identify and refer high risk people with diabetes.

### *Role of the government*

Some of the ophthalmologists and optometrists were of the opinion that once the government has realized the need for task sharing and the benefits that can be obtained through it, the implementation process would become easier and faster. A senior ophthalmologist reported:

*“First, it is the government responsibility to realize the benefits of task sharing and second is the prevention of blindness committee. They should make sure that all the institutions should have this type of practice.”*

An endocrinologist noted that collaborative planning by the government and stakeholders is needed to come to mutual solutions that benefit all stakeholders, including the patients and the workforce concerned.

#### *Role of NGOs*

Participants reported that the role of non-government organisations (NGOs) in eye care was mostly limited to cataract and refractive errors. Only a few NGOs such as the Fred Hollows Foundation and Christian Blind Mission provided targeted DR screening, supported by collaborative networks with public hospitals. DR was deemed part of diabetes care by the NGOs, including the Diabetes Association of Pakistan, but their main focus was on healthcare standards and protocols for diabetes with little attention to DR.

#### **Theme 7: Continuing Medical Education and Supervision**

All the interviewed participants agreed that there should be continuing education and refresher courses for optometrists and mid-level eye care workers so that their knowledge and skills pertinent to eye care can be improved. In addition, three ophthalmologists noted that there should be continuing medical education and training for all professionals, including ophthalmologists, to update on new advancements in technology, and new procedures and protocols for best practice in DR screening and care.

#### *Supervision for continuing medical education*

Interviewees suggested that continuing education could be guided by ophthalmologists or senior optometrists. An ophthalmologist, serving in the position of administrator explained:

*“It depends. For instance in teaching hospitals where optometrists are very active and are engaged in screening, detection and referral program, senior optometrists can very easily provide refresher training to optometrists in district levels, to ophthalmic technicians and even to junior doctors.”*

#### **Discussion**

This research shows that systematic DR screening to prevent avoidable blindness remains one of the neglected areas in DR management in Pakistan, and participants believe that there is need for task sharing to improve timely access to eye care for people with diabetes. Participants in this study confirmed the value of expanding the roles of optometrists and mid-level eye care workers in eye care delivery to people with diabetes. These findings are

consistent with the studies on the potential benefits of task sharing reported in India, Australia and Pakistan<sup>13-18</sup>.

As indicated in the findings, eye care facilities were mainly dependent on the services of ophthalmologists for managing DR and there was a shortage of ophthalmologists. DR screening was limited to targeted areas where NGOs were involved, as reported in the literature<sup>13, 19</sup>. Participants in this research believed that task sharing could improve the existing eye care system and increase screening coverage for people with diabetes.

There was a perception among some ophthalmologists that non-ophthalmologists might overstep their professional boundaries, and the term “task shifting” was not acceptable to them. Similar concerns were found in the literature<sup>13, 20, 21</sup>. This research suggests that it is important to promote the concept of task sharing as a collaborative model where ophthalmologists maintain oversight of DR screening and referral pathways. In this way, ophthalmologists can target their professional expertise where it is most needed because optometrists and mid-level eye care workers are sharing the preliminary workload of identifying high risk patients and screening for DR. Thus, the integrated task sharing would not usurp the role of ophthalmologists but enable them to share tasks, particularly with optometrists.

An effective task sharing model depends on having adequately prepared workers available. According to the WHO, optometrists are often the first point of contact for persons with eye diseases<sup>22</sup>. In Australia, the USA and the UK, people with diabetes go directly to an

optometrist for their initial eye tests, rather than waiting to be examined by an ophthalmologist<sup>23-25</sup>. Findings from this study also suggest that people with diabetes can be sent directly to an optometrist for initial eye exams. The development of optometry training programs in Pakistan and other countries such as Ghana and Malawi in Africa, in collaboration with Sightsavers International and CBM, has enabled these countries to increase their numbers of optometrists<sup>26</sup>.

There were positive attitudes towards task sharing across all participants. However, barriers to implementing a task sharing model included lack of adequate training in DR detection in the eye care workforce, lack of policies and health regulations, and lack of coordination among policy makers and health professionals. Support and facilitation from the government and NGOs is needed to implement a task sharing model to increase screening coverage for people with diabetes.

### **Conclusion**

Participants were accepting task sharing approach. Participants believed that task sharing could make better use of the skills and services of available health care workers, maximise the productivity of eye care specialists, and improve timely access to eye care for people with diabetes.

### **Contributors**

Mufarriq shah contributed to the conception and design of the study, acquisition of data and analysis and interpretation of data, drafting the article and final approval of the manuscript. Ayesha Noor and Gail M Ormsby contributed to data entry, drafting of the manuscript and revising of the manuscript; Lil Deverell contributed to the conception and design of the study, data analysis and revising of the manuscript; C Alex Harper and Jill Elizabeth Keeffe contributed to the conception and design of the study and revising of the manuscript. All co-authors approved the final version of the manuscript.

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