THE PRIVATE OPTOMETRY PRACTICES IN MALAYSIA: THE PROFESSIONAL SERVICES

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ABSTRACT

The prevalence of private optometry practices that achieve the minimum standard operation procedure (SOP) in eye examination by Ministry of Health Malaysia and number of referral cases by private practices to the hospitals are identified in order to ensure the eye care services from optometrists in Malaysia can be optimized. An online survey has been distributed to all private optometrists with Annual Practicing Certificate (APC) of 2017 through their private email address; through alumni WhatsApp groups of all Optometry schools in Malaysia; and to the members of the Association of Malaysian Optometrists (AMO).The survey included questions on their demographics, available equipment, ophthalmic procedures routinely conducted in practice, barriers to provide routine procedures, special optometric clinic provided and the number of referral cases to hospitals. Respondents answered the questions given within the time frame of 1st September 2018 until 28th February 2019. Seventy-one (N=71) optometrists had responded the survey. Most practices had basic optometric instruments to conduct visual testing and refraction; equipments such as illuminated or projected Snellen chart (95.8%), retinoscopy (88.7%) and complete trial set (100.0%); but not the other essential equipments: direct ophthalmoscopes (78.9%), slit lamp biomicroscopy (67.6%), keratometry (46.5%) and RAF rules (46.5%). The lack of such essential equipment corresponds to the low number of practices conducting the respective procedures routinely. Most of respondents stated the reason for not providing full eye check-up in practices were due to unavailability of equipment (79.1%), lack of time (59.7%) and requested by the customers (34.3%). For the referral cases, private optometry practice only referred 0-20 cases per month. This study brings forward several suggestions to improve the present situation of eye care services in Malaysia. The data elicited in this study may be used as a basis to fulfill the demanding eye-care needs and determining the training and support guidelines for the efficient optometric services in Malaysia.

KEYWORDS: Optometrist; Private Optometrists; Malaysian Optometrists; Standard Operation Procedure; Private optometry practice; Routine Eye Check Up; Optometric facilities

INTRODUCTION

Optometrist is a front line profession who provides primary eye care for the community. According to the Association of Malaysian Optometrists (2016), the basic clinical skills and procedures that optometrists can perform include refraction to measure the refractive errors of the eye; binocular vision assessment of synchronization of the two eyes; ophthalmoscope to perform posterior examination of the eye; and slit lamp biomicroscopy for the detailed examination of external eye. The optometrists should also be able to measure intraocular pressure using tonometer. As for optical and dispensing, the supply and management of spectacles and contact lens are also performed. In addition, optometry clinics are also equipped with special clinics such as colour vision, contact lens, low vision, binocular vision and pediatrics. These basic full eye check-up techniques which require specific instruments are readily known to be available in all government hospital and being practiced by government optometrists.

In Malaysia after completing the four years of degree in Optometry, the well-trained optometrists are required to be registered with Malaysia Optical Council to practice under Optical Act 1991. The optometrists are generally practicing in either government or private sectors such as in hospitals, eye clinics, universities offering optometry courses and optical shops. Nevertheless, the study by Norshahira (unpublished data 2018) showed that the current ratio of optometrists over Malaysians population is 1: 22319. The ratio is yet to achieve the ideal ratio of optometrist per citizens in developed country, 1: 10,000 (Thai & Yap, 2010). This situation indicates that all optometrists in Malaysia regardless of sectors either in government or private need to practice optometry professionally so that Malaysians population can receive comprehensive primary eye care. Fortunately, the government optometrists can optimize their job scope to provide full eye check-up as there are Ministry of Health Malaysia standard operation procedures (SOPs) (2009) to adhere to. Nevertheless, at this point of time, there is no requirement for private optometrists to follow similar SOPs.

In response to the increasing burden on the hospital eye care service, which resulted from increasing number of population and also towards achieving the Vision 2020: The Right to Sight which Malaysia has signed the formal declaration to support global initiative to eliminate avoidable blindness by the year of 2020 (Pizzarello, 2004), the frequency of referral cases by private practices also need to be identified based on the type and also justification of the cases in order to facilitate the efficiency of eye care service in Malaysia. Clear rules and regulation in private optometric practices have to be put ultimately in place to ensure that all standards facilities in eye examination are available and full eye check-up continues to remain accessible. The study therefore sought to outline the prevalence of private optometry practices that achieve the minimum standard operation procedure (SOP) in eye examination by Ministry of Health Malaysia and also the frequency, type and justifications for private practices to refer a case to hospital. This is important to ensure the eye care services from optometrists both in government and private sectors can be optimized.

METHODS

Study design

A survey (Appendix 1.0) has been designed in Google Form based on a guideline by Ministry of Health Malaysia and on the basic instruments and routine examination that should be available in government optometry practices guideline book by Majlis Optik Malaysia (2009). This survey questions are similar to previous literature which was conducted in 2010 by Mashige & Naidoo and Boadi-Kusi et al. (2015). The survey includes the question on personal information which is kept confidential, the availability of ophthalmic equipment and procedures which are considered essential for primary eye care services and also the special optometry clinic available in private optometry practices. Other questions were on frequency of referral cases by private optometric practices based on the type and justification of the cases.

A link to the online survey is distributed through private emails of private optometrists with Annual Practicing Certificate (APC) 2017 obtained from Malaysian Optical Council (MOC) database and WhatsApp messages to private optometrists through optometrists' associations such as Association of Malaysian Optometrists (AMO), all associations for each state and optometry alumni from each university in Malaysia. Respondents answered the questions given within the timeframe of 1st September 2018 until 28th February 2019.

Data analysis

The descriptive statistics was performed using Microsoft Excel 2007 to know the availability status of optometric instruments, routine examinations and referral cases in every private practice. The data was displayed in terms of frequencies and percentages by bar chart and pie chart. The ratio of government optometrist per population in Malaysia for each state was obtained and displayed based on descriptive statistics.

Ethical consideration

Approval to conduct the study was obtained from the National Medical Research Register (NMRR) and KAHS Ethics Committee (KAHS 63/18). Informed consent was obtained from all participants, which explained the study rationale and method. Once obtained, respondents were asked to complete the questionnaire.

RESULTS

The questionnaires are distributed via email to all private optometrist with Annual Practicing Certificate of 2017 who represent private optometry practices in Malaysia and 71 respondents are recorded. The analysis was therefore carried out on the sample of seventy-one (N=71) and was considered adequate for tolerable confidence intervals around desired parameters.

Demographic profile

The respondents come from all regions in Malaysia which are 14.0% of northern region comprises: Perlis, Kedah, Penang and Perak; 35.2% of central region: Selangor and Wilayah Persekutuan; 25.3% of east coast region: Terengganu, Kelantan and Pahang; 5.5% of southern region: Negeri Sembilan, Melaka and Johor and 9.9% from Sabah and Sarawak.

Optometric Equipment Availability

Most of the optometry practices were equipped with equipment to conduct basic optometric skills mentioned by Association of Malaysia Optometry (2016); equipment such as illuminated or projected Snellen chart (95.8%), retinoscopy (88.7%), complete trial lens set (100%), slit lamp (67.6%), Ishihara test (73.2%), ophthalmoscope (78.9%) and lensmeter (85.9%). Nevertheless, there are also basic equipment that are only can be found in few practices such as tonometer (40.8%), keratometer (46.5%) and RAF rule (46.5%).

Routine Eye Examination

Routine eye examination by private optometrists showed that 92.5% of them always perform history taking during eye test, 50.7% always perform retinoscopy for refraction examination and 74.6% always perform near refraction. Nevertheless, for ophthalmoscopy, only 32.4% did the test as routine, 38.0% for slit lamp and an alarming 31% of them never performed slit lamp assessment; and most of the private practitioners which are 54.9% never perform tonometry test which also corresponds to the low availability of respective instrument in private practices.

Table 1.0: The frequency of private practices performing routine eye check-up procedures and availability of respective instruments to conduct the procedures

Examinations (Equipment: Percentage of available equipment)	Frequency (%)		
	Always	Seldom	Never
General observation	87.3	11.3	1.4
History taking	93.0	7.0	0
Visual acuity test (Snellen chart: 95.8)	98.6	1.4	0
Pupillary reflex test (Pen torch: 91.5)	25.4	67.6	7.0
Retinoscopy (Retinoscope: 88.7)	50.7	43.7	5.6
Subjective refraction (Trial lens set: 100)	100	0	0
Near refraction (Near chart: 98.6)	74.6	16.9	8.5
Ophthalmoscopy (Ophthalmoscope: 78.9)	32.4	47.9	19.7
Slit lamp biomicroscopy (Slit lamp biomicroscope: 67.6)	38.0	31.0	31.0
Tonometry (Tonometer: 40.8)	25.4	19.7	54.9

The reasons for not performing the routine eye check-up are listed by chart below which most of the practitioners stated unavailability of instruments as the most frequent reason.

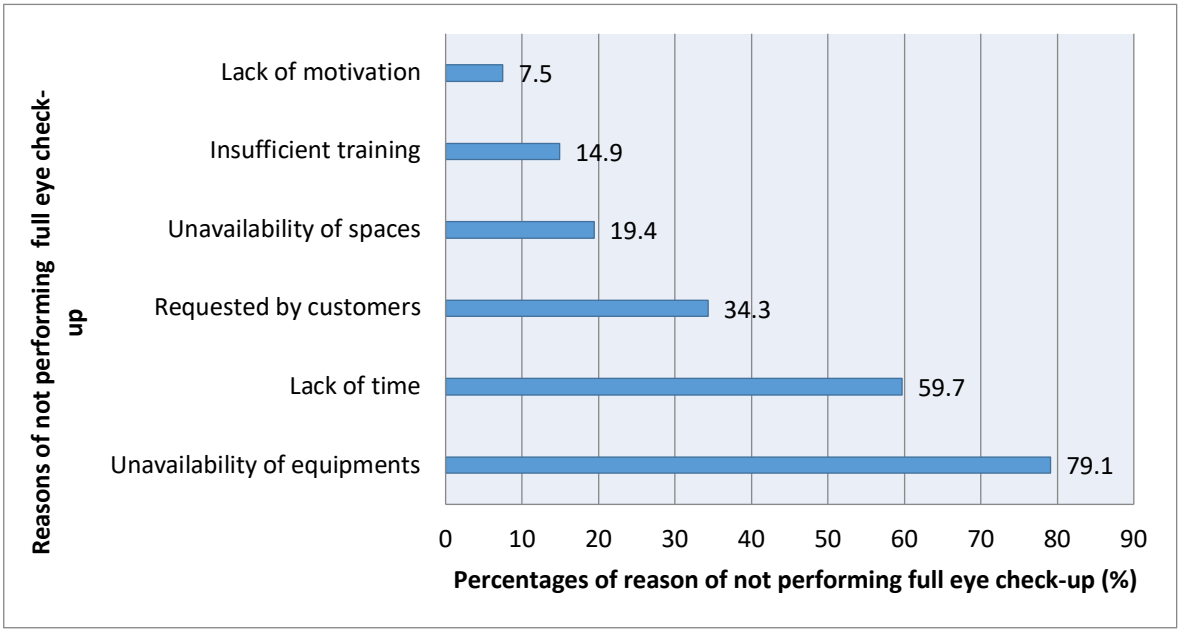

Chart 1.0: Reasons for private practices for not performing full eye check up

Special Optometry Clinic Services

Contact lens is the most frequent service provided by private practice (84.4%), followed by pediatric eye care (45.3%) and binocular vision and orthoptics services (39.1%). Meanwhile, special diagnostic service (32.8%) and low vision service (10.9%) are the least provided services.

Table 2.0: The percentages of specials optometry clinic services in private practices procedures and availability of respective instruments to conduct the special clinics

Special Clinic Percentages	Instruments	Availability
Contact Lens (84.4%)	Slit lamp (for contact lens assessment)	67.6%
	Keratometer (for initial base curve calculation)	46.5%
	Soft Contact Lens trial set	38.0%
	RGP Lens trial set	26.8%
	Fluorescein strip/ Hi-glow	49.3%
Binocular vision clinic (39.1%)	Prism bar	35.2%
	TNO Stereotest/ Lang/ Frisby/ Titmus	32.4%
	Loose prism	47.9%
	Near and distance Worth 4 Dots	26.9%
	Hess Chart	7.0%
Paediatric Clinic (45.3%)	Preferential looking/ Sheriden Gardiner	28.2%
Low vision (10.9%)	Amsler Grid	62.0%
	Hand-held monocular telescope	4.2%
	Spectacle/ foldable, handheld/stand magnifier	12.7%
	Hand held/stand/dome or bar magnifier	1.4%

Referral cases

In a month, about 10 cases or less are referred to hospital by 90.1% of private practices with the presence of diseases as the mode of the reasons by 93.0%. The other rationales would be investigations purposes (73.2%), for special treatment (54.9%), lack of adequate equipment (52.1%) and patient require intensive care (43.7%). Most of the diseases referred by the private practices would be cataract, glaucoma and retinopathy.

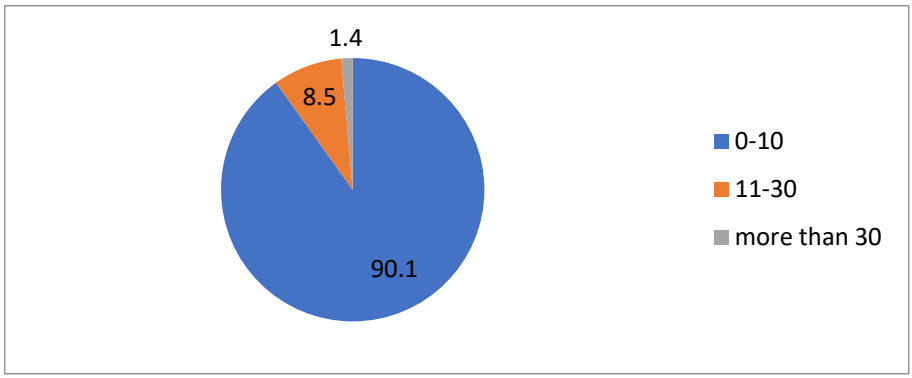

Chart 2.0: Percentages of frequency of referral cases made by private practices to government hospitals in a month.

DISCUSSIONS

This survey was distributed across Malaysia including Sabah and Sarawak as can be seen by the percentage of the respondents from different regions of Malaysia. Most of the optometrists in Malaysia may not have been practicing primary eye care according to the Ministry of Health Malaysia's SOPs, based on the percentage of practices having equipment such as slit lamp bio microscopy, tonometry and ophthalmoscopy and performing these tests as a routine. Most of the private practices stated that the unavailability of instruments as the reason for not performing full eye check-up but there are certain equipment that are already available but had not been utilized properly; for example, 88.7% of them has retinoscopy but only 50.7% always exercise retinoscopy in their practices. This action may neglect the importance of retinoscopy to objectively measure the refractive power especially in kids and patient with lack of response. In addition, without the use of retinoscopy, the examiners might miss out the sign of pseudomyopia, 'scissor reflex' in early keratoconus and cataract formation. Other example would be the use of ophthalmoscope in which there are only 32.4% of the practice always use the instrument and 25.4% always use tonometry in which two instruments are the essence in detecting glaucoma as one of the most common cause of preventable blindness and low vision (Chadrasekhara Reddy & Thevy, 2017). As for the Ishihara test, it is only available in 73.2% practices from the survey. Ishihara is an important test for detection of colour vision defect which will affect the patient's quality of life. For example, subjects with defective colour vision will have difficulty in identifying reflectors on the road and the rear signal lights of cars in front of them at night according to (Tagarelli et al., 2004) and early detection can give a better adaptation and acceptance from patient.

Special contact lens clinic is the most favoured special clinic provided by private practices with the availability percentage of 84.4%. Unfortunately, the number of providers did not tally with the equipment that is supposed to be available for the practice to perform the service. For example, only 67.6% of the practices have slit lamp, 46.5% has keratometry, 38.0% with soft trial set and 26.8% provide RGP trial set. This alarming finding suggests that there are private practitioners who exclude the preliminary examination prior to the proper contact lens consultation; and only sell the contact lens over the counter. The optometrist should acknowledge that slit lamp procedure is important for preliminary assessment to evaluate the anterior part of the eye to assess the suitability of the patient to wear contact lens, for fitting assessment and the other importance is to examine the eye and contact lens inspection during aftercare session.

For low vision cases, a study by Chew et al. (2018) stated that for a total of 15,000 subjects examined with the response rate of 95.3%, the age and gender adjusted prevalence of blindness, severe visual impairment and moderate visual impairment were 1.2%, 1.0% and 5.9% respectively. This fact is even more alarming as the 86.3% of the causes of blindness were avoidable which conclude that with the

adequate patient education and services, the cases of low vision can be avoided. However, based on the survey, only 10.9% of private practices provide the low vision service which is the least provided special Optometry clinic. A variety of treatment can be offered for the patient in private practices ranging from prescribing spectacles, contact lenses, low vision aids to introducing low vision rehabilitation. These will help the low vision patients to learn adaptive techniques and improve their quality of life.

Optometry industry is common to known as having many costly types of equipment especially when it comes to diagnostic equipment yet one of the solutions that can be implemented by the government in order to resolve the issue is to provide the loan for the private practice especially for private primary health care provider to buy the important expensive equipment. Not only for optometry, it is also can be exercised to other health care field such as audiology and physiotherapy. The other reasons for not routinely performing full eye check-up are lack of time and requested by customers. The time restriction can be related to the private practices that have many customers/patients in a day. On the other hand, optometrists should take role to make sure that patients get the best eye care service and not only eager to gain profit for the premise. As per requested by customers reason, better awareness should be given to the patient regarding the importance of full eye check-up. Unavailability of spaces for the reason for not performing eye check-up indicates that further actions need to be taken by the authority to make sure that this problem can be settled especially in terms of financial aid. Lack of motivation and insufficient training as the least reasons reflect that awareness should be given to the owner of private practices to send their optometrist to trainings in order to polish their skills and knowledge.

The frequency of referral cases are low from the private practices, most of the practices only referred 1-10 cases in a month. But to take into account the cases catered by government hospital, it can be concluded that most of the patients prefer to go directly to the hospital. The other reasons of referral cases by private practices such as customer need intensive care for urgent case (chemical burn and central retinal artery occlusion) and inadequate home condition especially for low vision patient are relevant reasons of referral as only experts and facilities at the hospital can attend the conditions.

The suggestion for the authority to recruit more government optometrists should be taken into account in order to achieve the optimal number of patient over one optometrist which is 1: 10,000 (Thai & Yap, 2010). This would include creating posts of optometrist at Klinik Kesihatan across Malaysia. There is usually one Klinik Kesihatan in each small and major town in Malaysia, almost all of these Klinik Kesihatan were run by Medical Assistants (MA). It would be better for the optometrist as a primary eye care provider to be placed in Klinik Kesihatan so that eye care service will remain accessible especially in term of detection of eye anamolies, annual eye check-up and follow up from the hospitals in patients who are not easily accessible to government hospital. Apart from that, optometrists in Malaysia especially in private practices should practice their acquired skills to detect the eye diseases as front liners of eye care. Although they are not certified with Doctor of Optometrist, the early detection of eye diseases with the sufficient training provided can ease the burden of government optometrists and ophthalmologist towards making the Vision 2020: The Right to Sight into reality. Awareness to the public also should be given that optometrists in private are able to detect eye diseases.

CONCLUSION

This research provides a few suggestions in order to ensure the efficient optometric services in Malaysia takes place. This may include the enforcement of clear rule and regulations for private optometric practices (based on the present SOPs of the Ministry of Health) to provide primary eye care service and the financial aid to the private practices to equip their practice professionally. Perhaps the collaboration between Ministry of Finance, Association of Malaysian Optometrists and the suppliers of instruments may play a role for this cause.

Awareness should be highlighted to the public on the available professional service provided by the private optometrist which include a comprehensive eye check eye-up and ocular disease detection. Continuous medical education programs or training should be attended by the private optometrist in order to keep abreast with the ever evolving technology in eye and vision care. Furthermore, a higher number of optometrists in the government hospitals and clinics should be recruited to improve the eye care services in Malaysia especially towards achieving the Vision 2020: The Right to Sight.

For the limitation of this study, it has limited number of participants as the private optometrists are reluctant to take part in the survey. Fincham (2008) stated that lack of response by the respondents to the questionnaire in a population is referred as nonresponse bias. Nonresponse bias can blow out the reliability and validity of survey study findings. Other study by Jaykaran (2010) elaborated on how to increase the response rate by improving the questionnaire that should be clearly designed and have a simple layout, the questionnaire also should be piloted and tested and lastly incentives or prize should be offered to the participants in return for completion can be exercised by next researcher to improve this study by increasing the number of participants.

ACKNOWLEDGEMENT

The authors would like to express sincere gratitude to individuals and organizations for supporting this study which include the Malaysian Optical Council (MOC) for allowing extraction of APC holders' data, Association of Malaysian Optometrist (AMO), optometrists' associations by states and alumni of every Optometry university for distributing our survey. Last but not least, to all participants who are willing to complete this survey.

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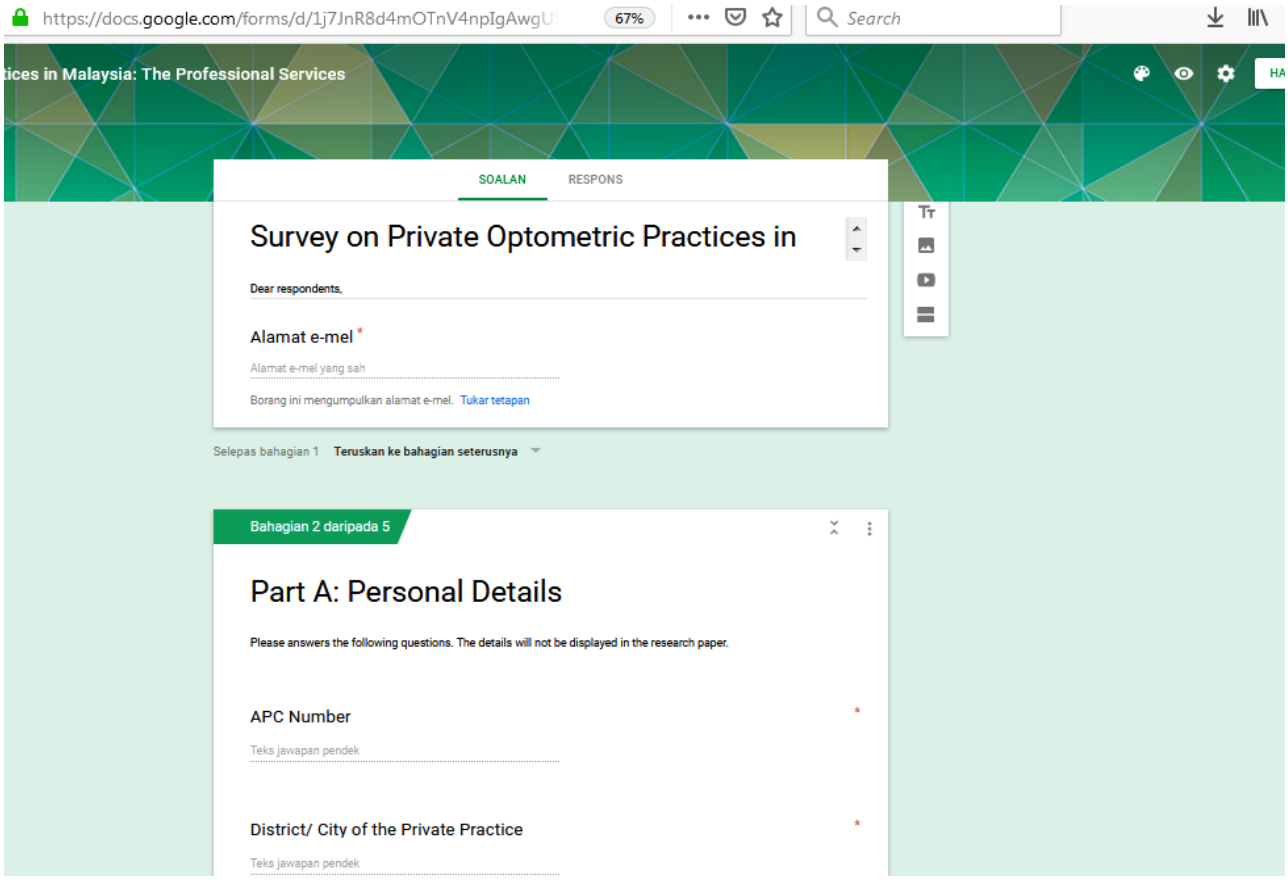
APPENDIX 1.0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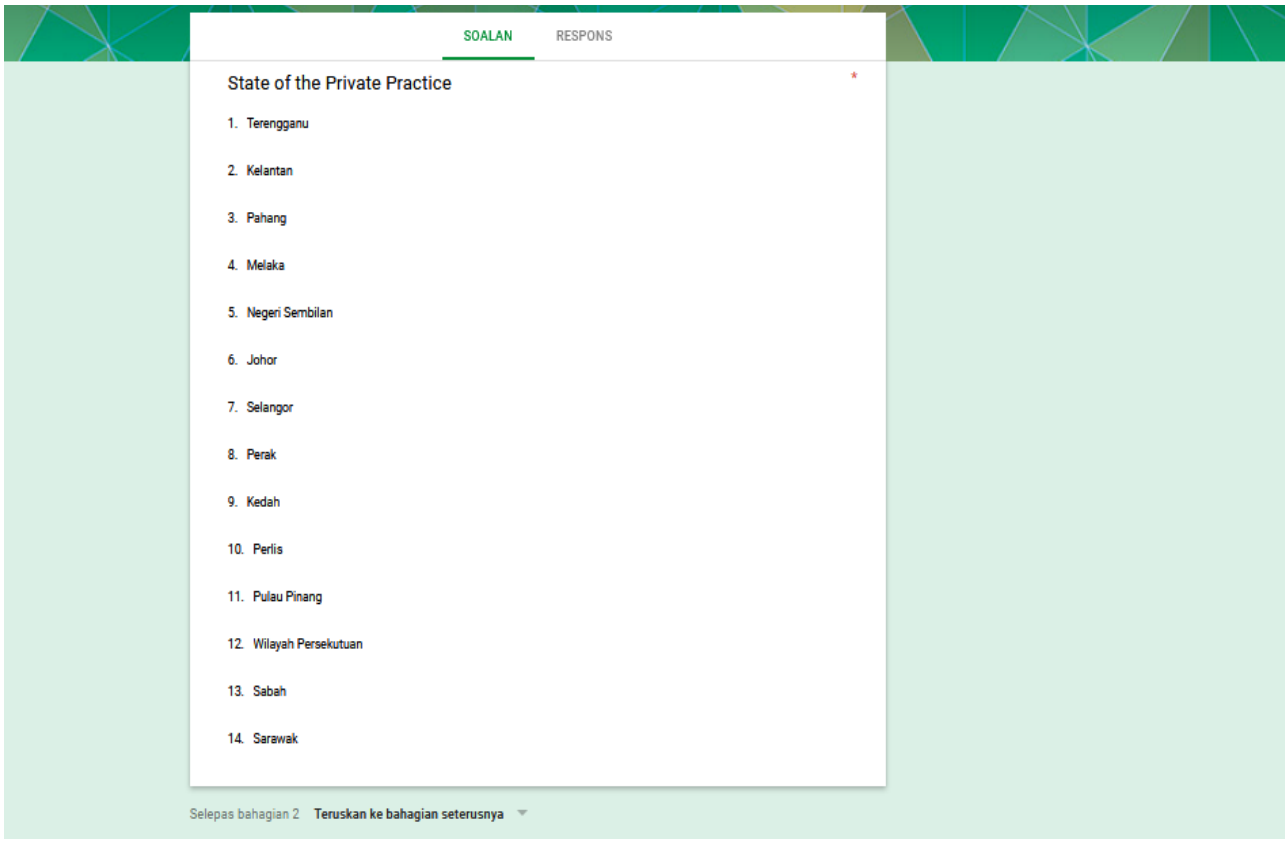
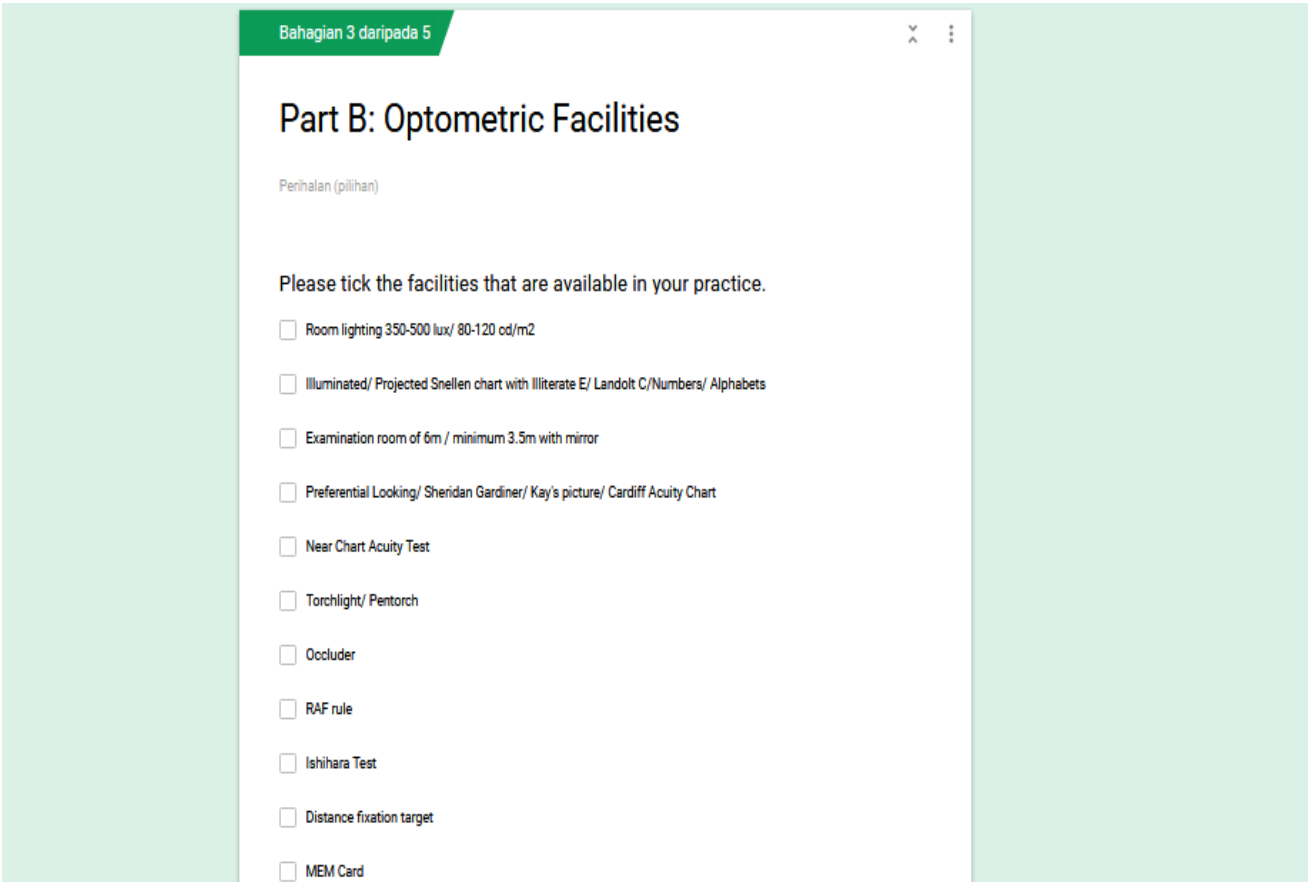
67%
Search
tices in Malaysia: The Professional Services
SOALAN
RESPONS
Survey on Private Optometric Practices in
Dear respondents,
Alamat e-mel *
Alamat e-mel yang sah
Borang ini mengumpulkan alamat e-mel. Tukar tetapan
Selepas bahagian 1 Teruskan ke bahagian seterusnya
Bahagian 2 daripada 5
Part A: Personal Details
Please answers the following questions. The details will not be displayed in the research paper.
APC Number *
Teks jawapan pendek
District/ City of the Private Practice *
Teks jawapan pendek


SOALAN RESPONS

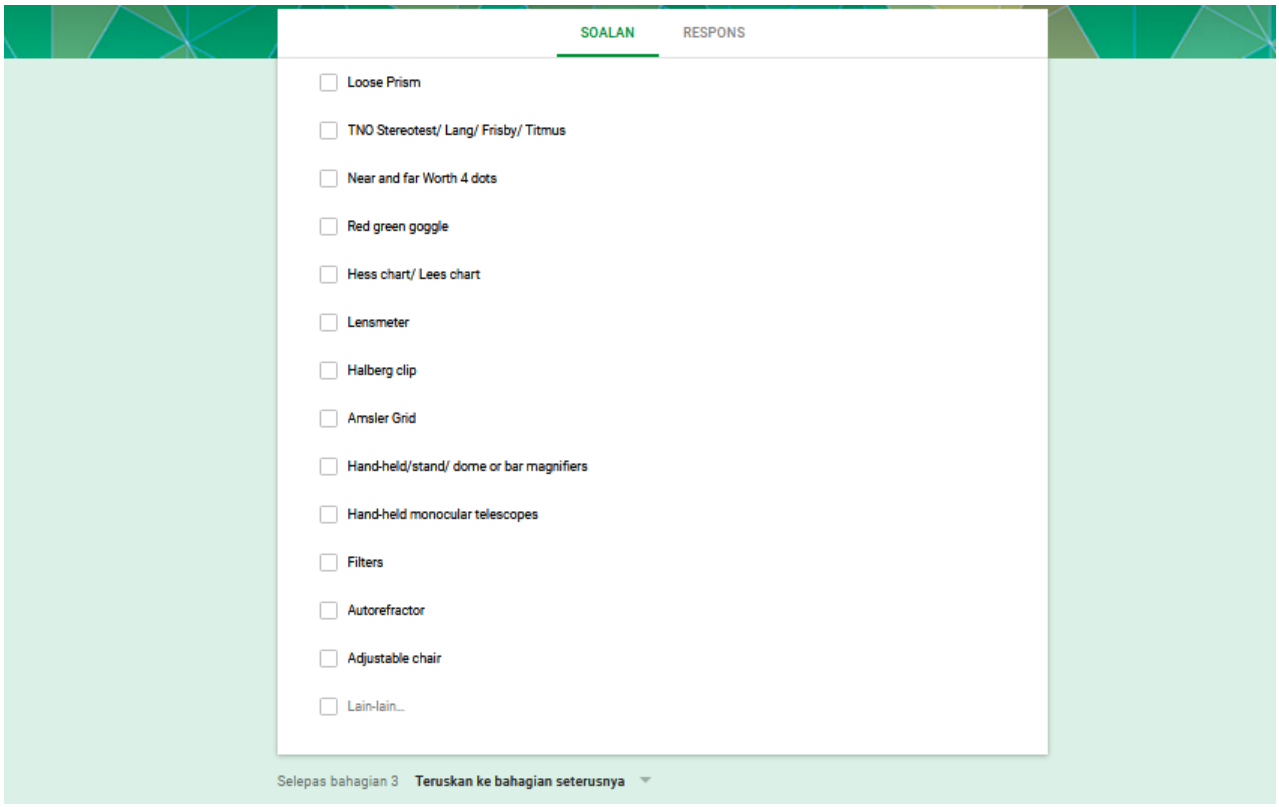
State of the Private Practice *

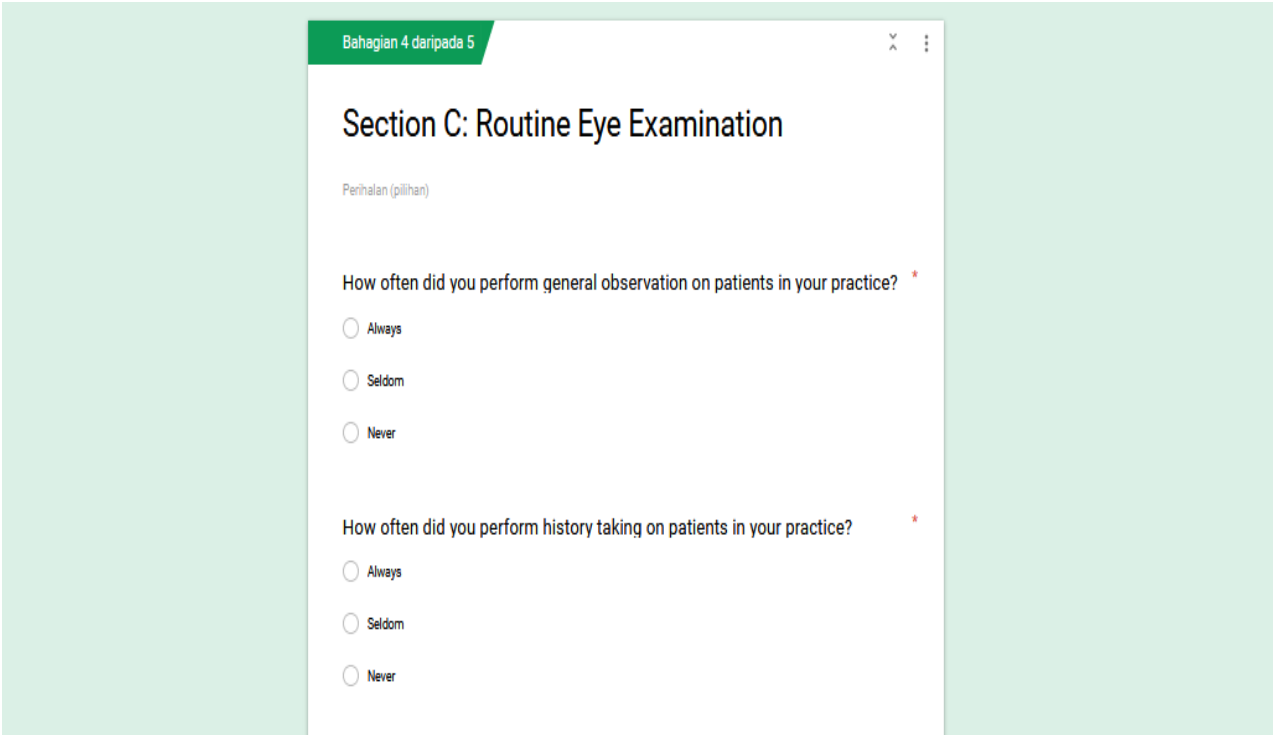
1. Terengganu
2. Kelantan
3. Pahang
4. Melaka
5. Negeri Sembilan
6. Johor
7. Selangor
8. Perak
9. Kedah
10. Perlis
11. Pulau Pinang
12. Wilayah Persekutuan
13. Sabah
14. Sarawak

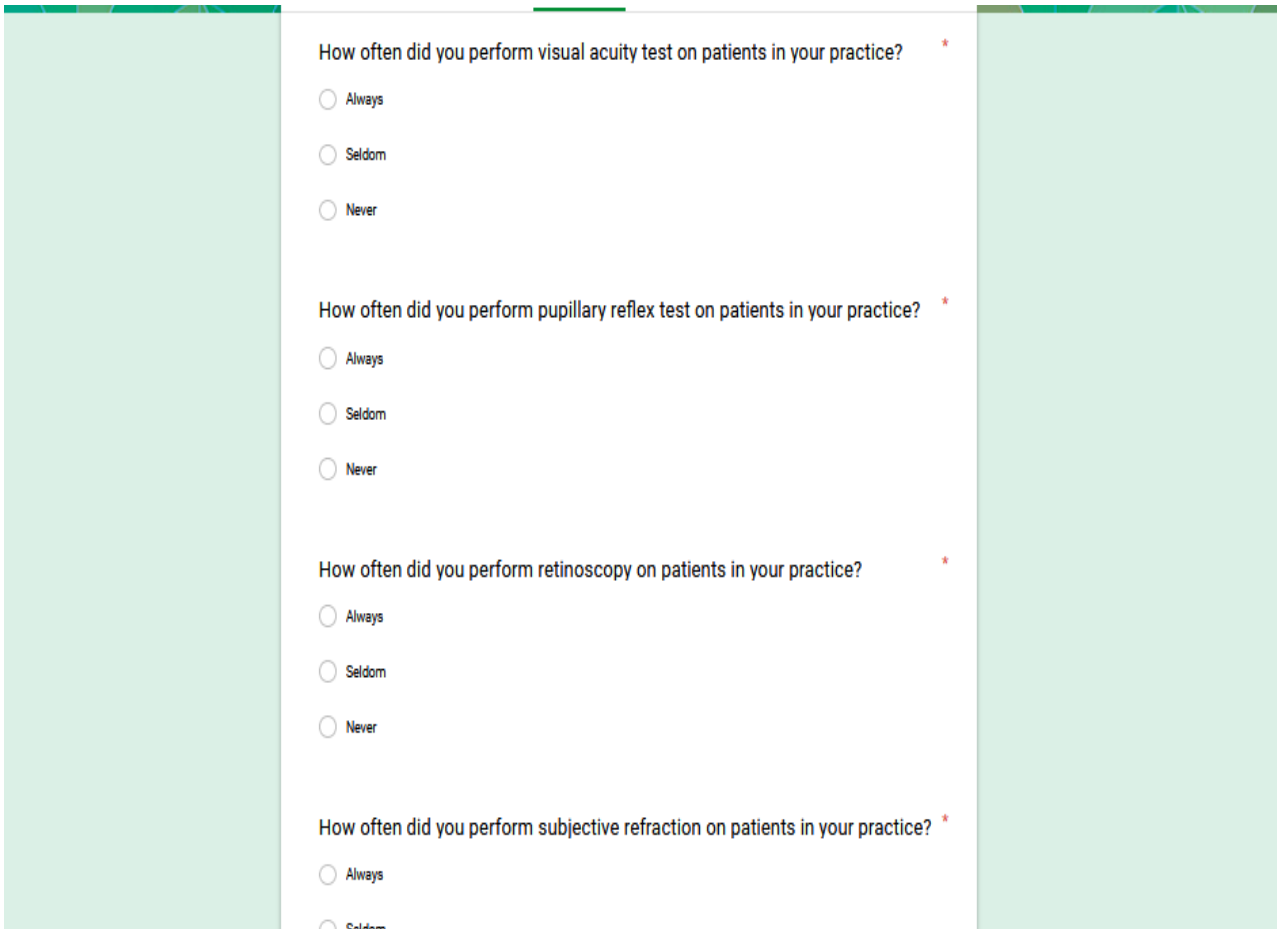
Selepas bahagian 2 **Teruskan ke bahagian seterusnya**


Bahagian 3 daripada 5
Part B: Optometric Facilities
Perihalan (pilihan)
Please tick the facilities that are available in your practice.
Room lighting 350-500 lux/ 80-120 cd/m2
Illuminated/ Projected Snellen chart with Illiterate E/ Landolt C/Numbers/ Alphabets
Examination room of 6m / minimum 3.5m with mirror
Preferential Looking/ Sheridan Gardiner/ Kay's picture/ Cardiff Acuity Chart
Near Chart Acuity Test
Torchlight/ Pentorch
Occluder
RAF rule
Ishihara Test
Distance fixation target
MEM Card

- [ ] Measuring Tape
- [ ] Retinoscope
- [ ] Complete trial lens set
- [ ] Trial frame
- [ ] Cross cylinder
- [ ] Slit lamp
- [ ] Ophthalmoscope
- [ ] Tonometer
- [ ] Sinks and taps
- [ ] Keratometer
- [ ] Contact lens trial set SCL
- [ ] Contact lens trial set RGP
- [ ] Fluorescein strip/ hi-glow
- [ ] Contact lens solution
- [ ] Accommodative fixation target
- [ ] Prism bar
- [ ] Prism 3BI/12BO, 6BI/6BO


SOALAN
RESPONS
Loose Prism
TNO Stereotest/ Lang/ Frisby/ Titmus
Near and far Worth 4 dots
Red green goggle
Hess chart/ Lees chart
Lensmeter
Halberg clip
Amsler Grid
Hand-held/stand/ dome or bar magnifiers
Hand-held monocular telescopes
Filters
Autorefractor
Adjustable chair
Lain-lain...
Selepas bahagian 3
Teruskan ke bahagian seterusnya


Bahagian 4 daripada 5
Section C: Routine Eye Examination
Perihalan (pilihan)
How often did you perform general observation on patients in your practice? *
Always
Seldom
Never
How often did you perform history taking on patients in your practice? *
Always
Seldom
Never



How often did you perform visual acuity test on patients in your practice? *

- Always
- Seldom
- Never

How often did you perform pupillary reflex test on patients in your practice? *

- Always
- Seldom
- Never

How often did you perform retinoscopy on patients in your practice? *

- Always
- Seldom
- Never

How often did you perform subjective refraction on patients in your practice? *

- Always

Seldom

Never

How often did you perform near refraction on patients in your practice? *

Always

Seldom

Never

How often did you perform ophthalmoscopy test on patients in your practice? *

Always

Seldom

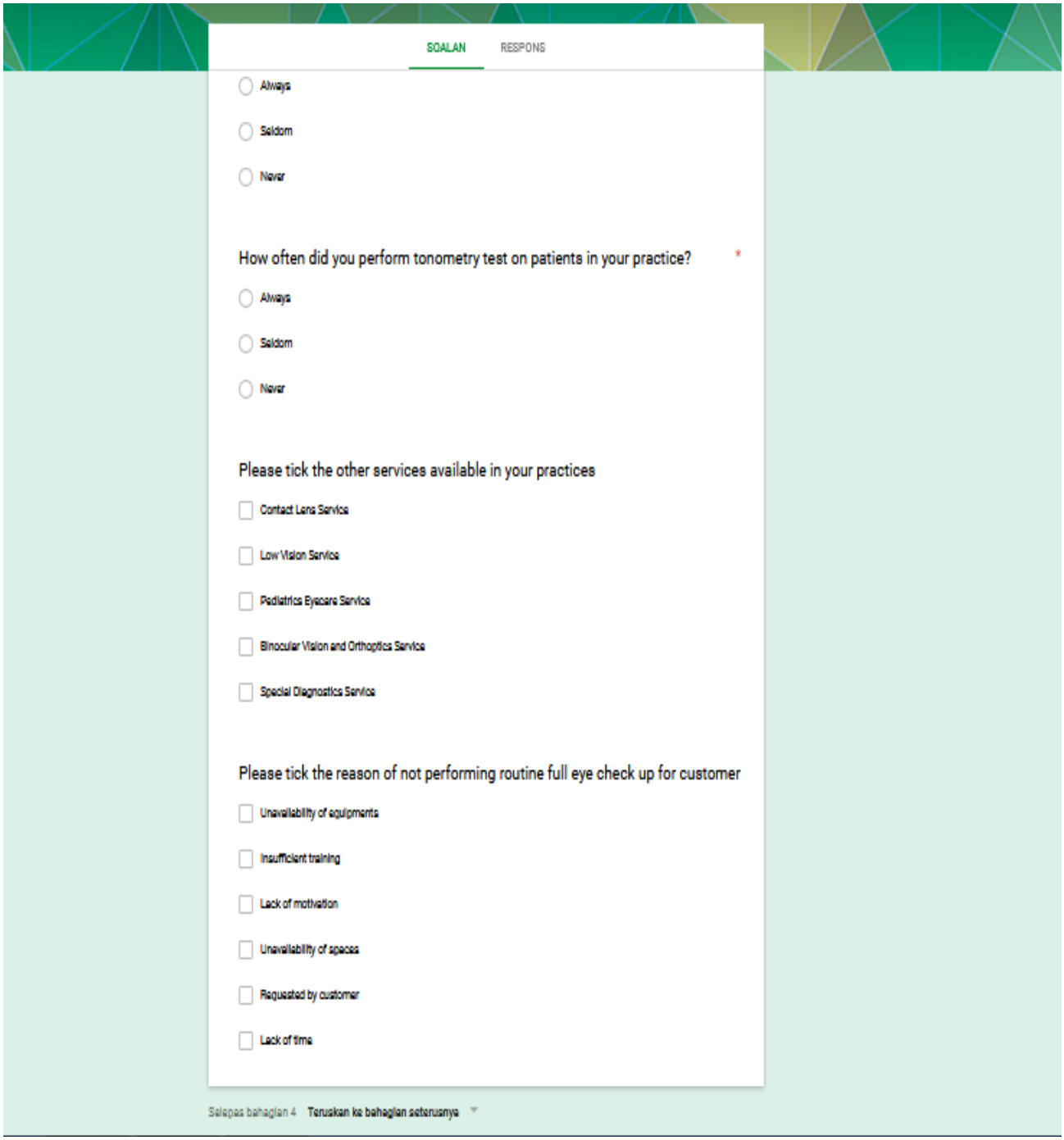
Never

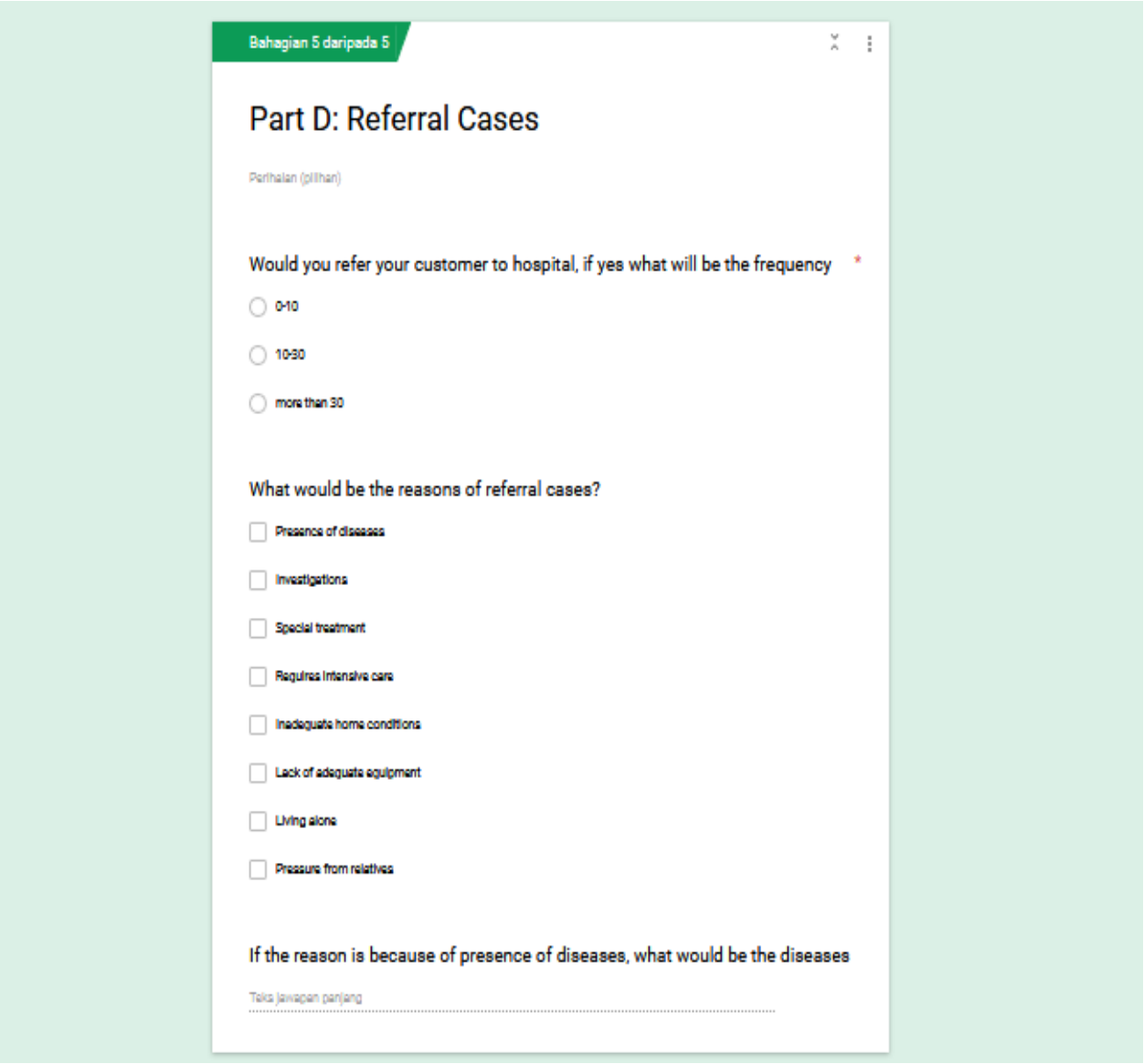
How often did you perform slit lamp biomicroscopy test on patients in your *

Always

Seldom

Never


SOALAN
RESPONS
Always
Seldom
Never
How often did you perform tonometry test on patients in your practice? *
Always
Seldom
Never
Please tick the other services available in your practices
Contact Lens Service
Low Vision Service
Pediatrics Eyecare Service
Binocular Vision and Orthoptics Service
Special Diagnostics Service
Please tick the reason of not performing routine full eye check up for customer
Unavailability of equipments
Insufficient training
Lack of motivation
Unavailability of spaces
Requested by customer
Lack of time
Selepas bahagian 4
Teruskan ke bahagian seterusnya


Bahagian 5 daripada 5

Part D: Referral Cases

Perihalan (pilihan)

Would you refer your customer to hospital, if yes what will be the frequency *

- 0-10
- 10-30
- more than 30

What would be the reasons of referral cases?

- Presence of diseases
- Investigations
- Special treatment
- Requires intensive care
- Inadequate home conditions
- Lack of adequate equipment
- Living alone
- Pressure from relatives

If the reason is because of presence of diseases, what would be the diseases

Teks jawapan panjang