



Perception and Awareness of Refractive Errors among Undergraduate Students in Jordan

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Summary

Introduction: Refractive errors are common visual impairments that can significantly affect academic performance and daily activities if left uncorrected. Understanding students' perceptions and awareness of these conditions is crucial for promoting eye health and ensuring appropriate vision correction.

Objective: To determine perceptions and awareness of refractive errors amongst undergraduate students in Jordan.

Materials and methods: A cross-sectional survey was conducted anonymously on 358 students. A structured closed-ended questionnaire was distributed to those studying in undergraduate courses in January – March 2023.

Results: The questionnaire was administered to 358 participants of whom 188 (52 %) were male. We found that 173 respondents (48.3 %) were aware of surgery as a method of correcting refractive errors while 119 (33.3 %) were aware of contact lenses. Fifteen (20.2 %) said they did not use glasses because of having headaches, while 19 (25.7 %) believed it made no difference. On the other hand, 72 people (56.3 %) reported wearing glasses all the time, while 112 respondents (or 87.5 %) would like to try another method of eyesight correction. The participants' attitudes were slightly negative towards the use of glasses.

Conclusions: Awareness of refractive errors was high as well as the awareness of various available methods of their treatment. The attitudes towards spectacle wear were found to be varying, thus showing the need of alternative treatment options for students.

Keywords: awareness, perception, refractive error, surgery, contact lenses, spectacles.

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Восприятие и осведомленность о нарушениях рефракции среди студентов бакалавриата в Иордании

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Резюме

Введение. Нарушения рефракции – это распространенные виды аномалии зрения, способные оказать существенное влияние на успеваемость и повседневную деятельность. Понимание восприятия и осведомленности студентов об этих состояниях имеет решающее значение для поддержания здоровья глаз и соответствующей коррекции зрения.

Цель. Установить восприятие и осведомленность о нарушениях рефракции среди студентов бакалавриата в Иордании.

Материалы и методы. Анонимный опрос был проведен среди 358 студентов бакалавриата в период с января по март 2023 года с помощью структурированной анкеты закрытого типа.

Результаты. В анкетировании приняли участие 358 человек, включая 188 (52 %) лиц мужского пола. Установлено, что 173 респондента (48,3 %) знают о возможности хирургической коррекции рефракционных аномалий, а 119 (33,3 %) знают о контактных линзах. Пятнадцать человек (20,2 %) ответили, что не носят очки из-за головных болей, в то время как 19 (25,7 %) не видят в этом смысла. С другой стороны, 72 человека (56,3 %) сообщили, что носят очки постоянно, а 112 респондентов (87,5 %) хотели бы попробовать другой метод коррекции зрения. Отношение участников к ношению очков было скорее негативным.

Заключение. Осведомленность студентов об аномалиях рефракции и различных доступных методах их лечения была высокой. Очень разное отношение респондентов к ношению очков указывает на необходимость альтернативных способов лечения.

Ключевые слова: осведомленность, восприятие, нарушение рефракции, хирургическая коррекция, контактные линзы, очки.

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Introduction

Visual impairment is a public health concern since it can have a negative effect on both children's and adults' quality of life. According to the World Health Organization (WHO), 285 million people worldwide are visually impaired, and about 80 % of these impairments are preventable [1]. WHO emphasizes that refractive errors are the primary cause of vision impairment in both children and adults.

Refractive errors happen when the optical system of the eye fails to precisely focus the light rays on the retina. This condition can be fixed with a pair of glasses, contact lenses, or through refractive surgery. Due to the irreversible nature of refractive defects, failing to diagnose them as they occur can have a detrimental effect on a person's social and academic/work life [2]. Consequently, the key to ensuring a normal development of the visual system is an early diagnosis and a suitable intervention, which is possible through perception and awareness of individuals about refractive errors.

Students have received attention from researchers to assess the incidence of refractive errors in them. Various factors such as family history and intensive smartphone use were found to contribute to increased rates of refractive errors in students affecting their academic achievements [3–5]. Knowing how well the public is informed about common eye problems can be useful in creating and designing effective public awareness programs [5]. Despite acknowledging the importance of awareness of visual conditions among individuals, there is a lack of research on the perceptions and awareness of refractive errors in university students.

Hence, the present study aims to investigate the perceptions and awareness of refractive errors among undergraduate students in Jordan University of Science and Technology.

Materials and methods

This descriptive cross-sectional study was conducted from January to March 2023 among undergraduate students at Jordan University of Science and Technology. It was approved by Jordan University of Science and Technology Institutional Ethical Review Board (Ref.: 29/155/2023). All participants gave their written informed consent indicating that they were willing to take part in the study.

Having obtained the ethics approval, we developed a 20-item questionnaire adapted from earlier studies conducted on a similar population. Five experts provided opinions about meaning and content sufficiency. The questionnaire was then administered to 22 students outside the study sample to calculate the validity of the internal consistency by calculating the Pearson's correlation coefficient; the value of the correlation was 0.83, which was statistically significant at $\alpha \leq 0.01$.

The reliability coefficient of the study tool was also extracted using Cronbach's alpha, and the result showed that the value of Cronbach's alpha was greater than 0.70, thus indicating that the tool had a high degree of reliability. This ratio was suitable for the purposes of the current study.

The structured questionnaire was used to collect demographic data (sex, age and course) as well as data on participants' knowledge, practice and attitudes towards refractive errors. The questionnaire was completed by 358 respondents (with response ratio of 41 %), of whom 188 (52 %) were male, 189 (53 %) were in the age group of 18–21, and 68 (19 %) studied optometry. Socio-demographic characteristics of the respondents are provided in Table 1.

The questions related to knowledge about refractive errors were "Have you ever had an eye exam?", "Do you think you have good eyesight?", and "What methods for correcting refractive errors do you know?" The questions about practices related to refractive errors

Table 1. Socio-demographic characteristics of the sample
Таблица 1. Социально-демографические характеристики выборки

Study population / Изучаемая популяция (n = 358)		
Socio-demographic information / Социально-демографические характеристики	N	%
Sex / Пол		
Female / Женский	170	48
Male / Мужской	188	52
Age, years / Возраст, лет		
18–21	189	53
22–26	169	47
Student course / Специальность		
General medicine / Общая медицина	41	11.5
Dentistry / Стоматология	47	13.1
Pharmacy / Фармация	49	13.7
Nutrition / Диетология	37	10.3
Optometry / Оптометрия	68	19.0
Nursing / Сестринское дело	42	11.7
Radiology / Радиология	36	10.1
Engineering / Инженерия	38	10.6

were “Do you know where to seek help if you have vision problems?”, “Where should you seek help when having eye problem?”, “Where did you have the eye exam?”, “Have you ever been prescribed glasses?”, “Do you have the glasses?”, “Why don’t you have the prescribed glasses?”, “How often do you wear glasses?”, “Would you like to try another way to correct your vision?” and “Which method would you like to try?” Eight statements were provided to assess attitude of the students. These statements were “Glasses lead to addiction and worsen vision”, “Young people don’t need correction for refractive errors”, “Glasses damage eyesight”, “Glasses make people less attractive to the opposite sex”, “Glasses reduce self-esteem”, “Glasses improve the appearance”, “Glasses are cosmetically embarrassing in public”, and “The glasses are associated with the person’s intelligence”.

The survey data were analyzed using the statistical software SPSS and a variety of statistical techniques, including frequencies, percentages, arithmetic means, median and Pearson’s simple correlation coefficients. The median Likert scale was calculated to identify students’ attitudes towards spectacle wear.

Students’ attitudes towards spectacle wear were scored on five-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree).

Results

Participant knowledge about refractive errors

Two questions were asked to assess the knowledge of the respondents about their current refractive state. Here, 305 respondents (85 %) reported having had an eye exam while 254 respondents (71 %) thought that they had good eyesight. When the respondents were asked about the methods for correcting refractive errors, it was found that 173 respondents (48.3 %) were aware of surgery while 119 respondents (33.3 %) were aware of contact lenses. Table 2 presents the findings of the participants knowledge about refractive errors.

Participant practice about refractive errors

Three questions were asked to assess the respondents’ access to eye health care. Three hundred and twenty-eight respondents (91.6 %) replied in the affirmative to the question whether they knew where to seek assistance if they had vision problems. Of them, 179 respondents (50 %) would seek advice in a healthcare center while 123 (34.3 %) would go

to the Central Hospital when having eye problems. When asked about where they had the eye exam, 126 respondents (38.2 %) reported having an eye exam in a healthcare center while 107 (32.4 %) had it in the Central Hospital. When the respondents were asked if they had ever been prescribed glasses, 202 (61.2 %) replied in the affirmative while 128 respondents (63.2 %) replied that they had glasses with them. When asked about the reason for not having glasses, 19 (25.7 %) replied that it did not make any differences while 15 (20.2 %) replied suffering from related headaches. Yet, 72 respondents (56.3 %) reported wearing glasses all the time, and 112 of 128 respondents having glasses (87.5 %) replied that they would like to try another way to correct their vision. Seventy-six respondents (67.9 %) would like to try refractive surgery while 36 (32.1 %) would like to try contact lenses. Table 3 presents the findings of the participants’ practice about refractive errors.

Students’ attitudes towards spectacle wear

Eight statements were provided to assess the respondents’ attitudes towards spectacle wear (Figure). We found that 201 respondents (78 %) either strongly agreed or agreed that “Glasses lead to addiction and worsen vision”; 223 respondents (86 %) either strongly agreed and agreed that “Young people don’t need correction for refractive errors”; 202 respondents (78 %) either strongly agreed and agreed that “Glasses damage eyesight”; 199 respondents (77 %) either strongly agreed and agreed that “Glasses make people less attractive to the opposite sex, and 191 respondents (74 %) either strongly agreed and agreed that “Glasses reduce self-esteem”. At the same time, 142 (55 %) remained neutral for “The glasses improve the appearance”; 172 (66 %) either strongly disagreed or disagreed that “Glasses are cosmetically embarrassing in public”, and 223 (86 %) either strongly disagreed or disagreed with the statement that “The glasses are associated with a person’s intelligence”. The figure demonstrates the students’ attitudes towards spectacle wear.

Discussion

We established that over 80 % of the respondents were aware of their eye problems as revealed by their having an eye exam. This high percentage might reflect a positive trend and indicate eye health awareness.

Table 2. Participant knowledge about refractive errors

Таблица 2. Осведомленность участников исследования о нарушениях рефракции

Study population / Изучаемая популяция (n = 358)			
1. Knowledge about current refractive state / Осведомленность о наличии у себя нарушений рефракции			
Have you ever had an eye exam? / Вы когда-нибудь проверяли свое зрение?		Do you think you have good eyesight? / Вы считаете, что у Вас хорошее зрение?	
Yes / Да	305 (85 %)	Yes / Да	254 (71 %)
No / Нет	53 (15 %)	No / Нет	104 (29 %)
2. Knowledge about the methods of correction of refractive errors / Осведомленность о методах коррекции нарушений рефракции			
What methods for correcting refractive errors do you know? / Какие методы коррекции нарушений рефракции Вам известны?			
Surgery / Операция		173 (48.3 %)	
Contact lenses / Контактные линзы		119 (33.3 %)	
Ophthalmic lenses / Офтальмологические линзы		47 (13.1 %)	
Medication / Медикаментозное лечение		19 (5.3 %)	

Table 3. Participants practice about refractive errors
Таблица 3. Поведение участников в связи с нарушениями рефракции

Study population / Изучаемая популяция (n = 358)		
3. Access to eye health care / Доступ к офтальмологической помощи	N	%
Do you know where to seek advice if you have vision problems? / Вы знаете, куда обратиться за медицинской помощью в случае возникновения проблем со зрением?		
Yes / Да	328	91.6
No / Нет	30	8.40
Where should you seek advice when having an eye problem? / Куда Вы обратитесь за медицинской помощью в случае возникновения проблем со зрением? (n = 358)		
Healthcare center / Медицинский центр/поликлиника	179	50.0
Central hospital / Центральная больница	123	34.3
Optic shop / Оптика	56	15.7
Where did you have the eye exam? / Где Вы проходили проверку зрения? (n = 330)		
Healthcare center / Медицинский центр/поликлиника	126	38.2
Central hospital / Центральная больница	107	32.4
Optic shop / Оптика	97	29.4
4. Barriers for use of spectacles / Причины отказа от использования очков		
Have you ever been prescribed glasses? (n = 330) / Вам когда-нибудь прописывали очки?		
Yes / Да	202	61.2
No / Нет	128	38.8
Do you have the glasses? / У Вас есть очки? (n = 202)		
Yes / Да	128	63.4
No / Нет	74	36.6
Why don't you have the prescribed glasses? / Почему у Вас нет прописанных очков? (n = 74)		
It does not make any difference / Это не имеет никакого значения/смысла	19	25.7
I feel headaches / У меня от них болит голова	15	20.2
They are very expensive / Они очень дорогие	8	10.8
I lost the prescription / Я потерял рецепт	8	10.8
I broke my glasses / Я сломал очки	13	17.6
Another reason / Другая причина	11	14.9
5. Alternative methods for correction of refractive error / Альтернативные методы коррекции нарушений рефракции		
How often do you wear glasses? / Как часто Вы носите очки? (n = 128)		
Always / Постоянно	72	56.3
Sometimes / Иногда	56	43.7
Would you like to try another way to correct your vision? / Хотели бы Вы попробовать иной метод коррекции зрения? (n = 128)		
Yes / Да	112	87.5
No / Нет	16	12.5
Which method would you like to try? / Какой метод Вам хотелось бы попробовать? (n = 112)		
Refractive surgery / Рефракционная хирургия	76	67.9
Contact lenses / Контактные линзы	36	32.1

Regular eye exams are essential for detecting and managing refractive errors, as well as other eye conditions. A significant proportion (71 %) of the respondents believed they had good eyesight. However, it is important to note that self-perception of good eyesight may not always align with actual refractive conditions. Some individuals might have mild refractive errors without realizing it. This finding highlights the need for increased awareness of the importance of regular eye check-ups, even among those who believe they have good eyesight. In addition, more than 30 % of the students were found to be aware of surgery and contact lenses as corrective methods for refractive errors. While it is encouraging to find that some of

the population is aware of refractive error correction techniques, the extremely low awareness of these techniques is a cause for concern. This complies with previous literature showing the need for university students to be aware of their eye health and related issues [6, 22].

Recent studies have demonstrated that the screen time trends associated with COVID-19 in university students resulted in higher incidence rates of eye conditions, making awareness of eye health even more relevant [7, 8]. Thus, it is crucial to collect information about students' awareness of eye diseases and use it for planning. Most of the awareness studies related to eye conditions in general and refractive errors in

ATTITUDES OF STUDENTS TOWARDS SPECTACLE WEAR / ОТНОШЕНИЕ СТУДЕНТОВ К НОШЕНИЮ ОЧКОВ

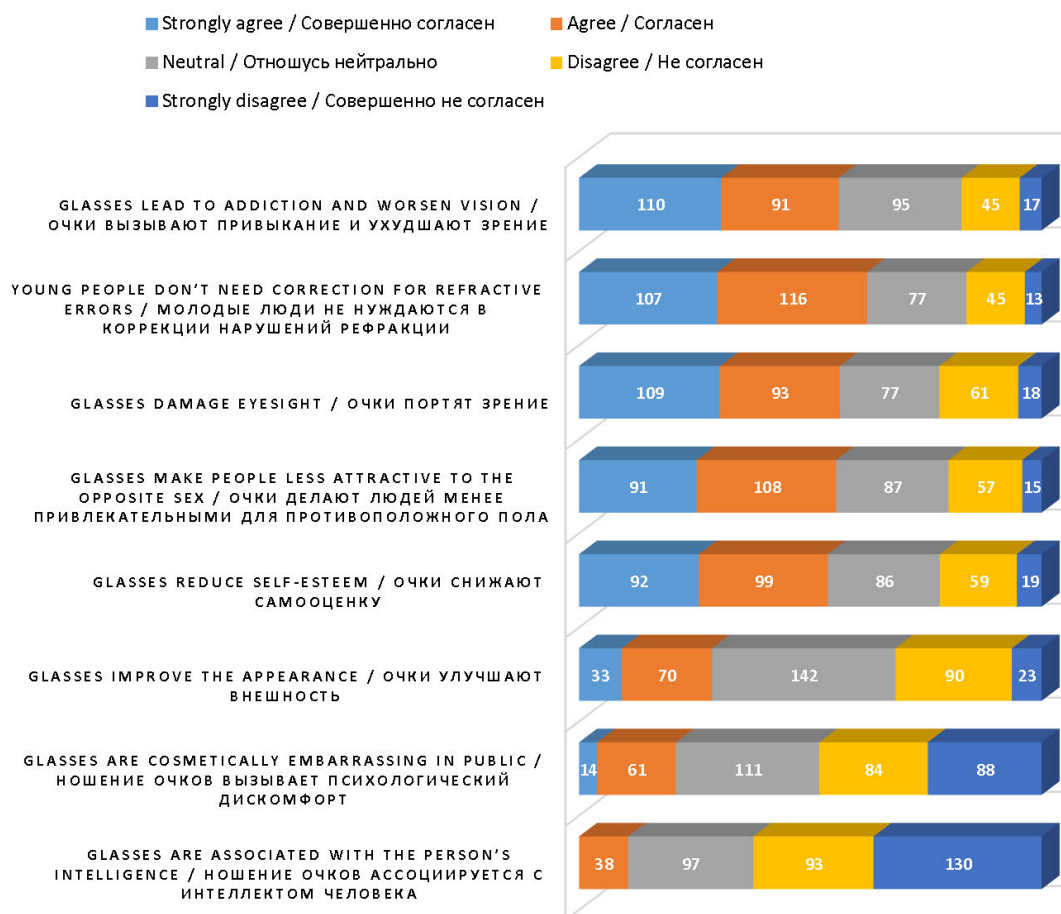


Figure. Students' attitudes towards spectacle wear

Рисунок. Отношение студентов к использованию очков

particular were found to be conducted in countries other than Jordan [7–10]. This study describes the level of students' awareness of refractive errors in Jordan. As mentioned above, comprehensive eye care will be facilitated by disease prevention and promotion of eye health.

This study aids in the development of an efficient campaign to encourage eye health among Jordanian students.

The second part of the results highlights the students' practice about refractive errors. A significant majority of the respondents (91.6 %) indicated that they knew where to seek help if they had vision problems and about half of the respondents (50 %) expressed a preference for seeking help at healthcare centers. This high level of awareness is encouraging as it suggests that a substantial portion of the population is informed about where to access eye health care services [23]. The results show that a significant number of individuals have undergone vision assessments and obtained corrective eyewear. Among those who did not have glasses, a notable percentage (25.7 %) believed that glasses would not make any difference in their vision. Additionally, 20.2 % mentioned experiencing headaches as a reason

for not having glasses. These reasons underscore the need for education and information dissemination to address misconceptions and promote eye health. The varying preferences for vision correction methods indicate a need for diverse options to meet individual needs and preferences [24].

The survey results highlight mixed attitudes among students regarding spectacle wear. While some students hold negative beliefs about the impact of glasses on vision and self-esteem, there are also positive attitudes, such as not associating glasses with intelligence or finding them cosmetically embarrassing. These findings emphasize the importance of education and dispelling myths surrounding eyewear to promote a more informed and positive attitude towards vision correction. Previous studies were found to corroborate varying attitudes of students with some considering spectacles to be effective in maintaining their vision while some considering them as a barrier in leveraging opportunities related to education, job and marriage [15–18]. The need for corrective methods for refractive errors was thus confirmed by this study as well as previous studies, which determine the expected acceptance and success of these methods if presented as an option to the students [19–21].

Study limitations

The sampling method might restrict the ability to generalize and extrapolate the study results to broader populations. The research only assessed a specific set of factors related to refractive error knowledge. It does not consider other potential determinants or variables that could influence knowledge about refractive errors. Addressing these limitations in future research can enhance the robustness and applicability of the findings.

Conclusions

Refractive errors are the most prevalent type of vision problems, characterized by the eye inability to properly focus light on the retina, resulting in blurred vision. Studies have shown that limited awareness among students about refractive errors and their corrective methods can significantly impact their quality of life, academic performance, and motivation [11, 12]. To address these challenges, it is imperative for educational authorities to engage in comprehensive promotion and awareness campaigns targeting students [13, 14]. This study reveals that students in Jordan are generally aware of vision problems and available treatment methods and know where to seek advice for eye issues. However, there exists a diversity of attitudes towards wearing spectacles. It is anticipated that increased awareness of refractive errors will encourage greater utilization of eye care services, thus facilitating early detection, treatment, and cost savings. Such initiatives can ultimately contribute to prevention of vision loss. Given the variety of attitudes towards spectacle wear observed in this study, students are recommended to be educated about the full spectrum of available treatment options and the treatment process. Moreover, students should be encouraged to seek medical attention at the first sign of a vision problem to ensure its swift and effective management and prevent exacerbation.

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Информация о вкладе авторов: концепция и дизайн исследования, обзор литературы: *Аль Дарайсе А., Алебрахим М.А.*; сбор данных: *Алебрахим М.А.*; анализ и интерпретация результатов, подготовка проекта рукописи: *Аль Дарайсе А.* Оба автора рассмотрели результаты и одобрили окончательный вариант рукописи.

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