



Profile, knowledge, and attitude of contact lens users regarding contact lens wear in Ghana



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ABSTRACT

Background: Contact lenses are gaining popularity in developing countries as an alternative to spectacles for the correction of refractive errors. It is needful, therefore, to generate information to guide the mode of practice, and assist the industry in developing products for the increasing contact-lenses-user population. The purpose of this study was to identify the demographic profile, as well as the knowledge, attitude to wear and care regimen of wearers of contact lenses in Ghana.

Methods: In a cross-sectional study, case folders of 87 users of contact lenses were selected from the database eye contact lenses practices. The folders were reviewed for the demographic profile, type, and purpose for which the contact lenses were prescribed. Forty-two (42) contact lenses users were then randomly surveyed, using a semi-structured questionnaire to collect information on their knowledge, lens wear regimen, and attitudes regarding lens hygiene. Chi-square test was used to test associations between demographics and lens wear variables.

Results: Out of the 87 cases reviewed, 46 (52.9%) were females and 41 (47.1%) males. Their ages ranged from 15 to 68 years with a mean age of 28.62 ± 9.38 years. The majority- 65 (75%) - were youthful (≤ 40 years), with the highest proportion of them - 46 (53%) - being between 20–29 years. The majority - 60 (68.9%) - had a tertiary level of education. Soft contact lenses were commonly worn by 68 (78.2%) users while 19 (21.8%) wore rigid gas permeable lenses. The purpose for wearing contact lenses included for vision correction - 46 (52.9%), followed by for cosmesis - 23 (26.4%) - and therapeutic reasons -18 (20.7%). The commonest refractive error corrected was myopia - 38 (43.7%), followed by astigmatism -19 (21.8%) and hyperopia 6 (6.9%). Among the 42 users who responded to the questionnaire, by proportion, the majority -17 users (40.5%) - were introduced to contact lenses by optometrists. All respondents reported previous symptoms associated with the use of their contact lenses, but slightly more than half, 25 (57.1%) did yearly follow-up visits.

Conclusion: The majority of contact lenses used in Ghana are soft lenses, for the purpose of vision correction. The use of contact lenses was common among individuals in their early adulthood and those with tertiary education.

1. Introduction

Recent advances in clinical practice, coupled with the increasing scope of optometry practice [1,2] in many developing countries, have led to an increase in the use of contact lenses for the correction of refractive errors. Refractive errors (myopia, hyperopia, and astigmatism) affect all persons regardless of an individual's age, sex, ethnic group or nationality and impair the quality of life of such individuals [3–5]. Globally, it is estimated that visual impairment affects about 285 million people, 246 million of whom have low vision and 39 million blind. The major cause of visual impairment is uncorrected refractive errors,

affecting about 153 million people (constitutes 43% of global visual impairment) over the age of 5 years. More than 70% of individuals with visual impairment live in developing countries [5–9]. Fortunately, such refractive errors can easily be diagnosed, measured and corrected with spectacles, contact lenses or refractive surgery to restore normal vision. In developed countries where the use of contact lenses has long been practiced, there is a high prevalence of contact lenses use as a corrective mechanism for refractive errors [10,11]. For example, the prevalence of adult contact lenses usage in the UK, Norway, Japan and, the USA are, 7.2%, 12.0%, 14.6% and 14.7% respectively [10,11]. In Saudi Arabia, contact lenses use was found to be as high as 70% among female

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university students [12]. In developing countries, the dispensing and use of contact lenses are less recommended and practiced by Optometrists, Ophthalmologists, and other qualified personnel. Therefore, the traditional spectacle glasses are the primary option for treating uncorrected refractive errors and this is largely due to low knowledge of patients in contact lenses, poor source of supply of contact lenses, a gap in the skills of practitioners, equipment and cost implications [7,13,14]. The use of contact lenses, however, presents quite a number of advantages: contact lenses are cosmetically appealing, provide the best vision due to the minimisation of spherical aberration and prismatic effect, and enhance peripheral vision because of the associated lens movement during eye rotation [15–17]. In Ghana, three cadres of eye care professionals provide ophthalmic services for the over 28 million Ghanaians, namely, ophthalmologists (78), optometrists (326) and ophthalmic nurses (288). Refractive services are however provided by ophthalmologists and optometrists, but refractive error corrections and contact lens fitting are primarily offered by optometrist [13]. A survey of Optometrists in Ghana revealed that low interest of patients in contact lenses (44.8%), poor source of supply of contact lenses (27.6%) and insufficient training (19.5%) were barriers to their practice of contact lenses [13]. A more recent study among spectacle wearers in Ghana also found low knowledge (34.8%) and low usage (3.3%) of contact lenses [14]. In response to the global need to correct all forms of refractive errors, and due to recent increases in the number of trained optometrists and other eye care practitioners who have acquired the requisite skills for contact lenses fitting, the use of contact lenses as a refractive intervention is becoming prevalent in many developing countries, including Ghana. Previous studies in older markets of contact lenses practice suggest that the type and use of contact lenses depend on factors such as patients' demographics, availability, income, practitioner perceptions and socio-cultural factors of nations [10,11,16–18]. In addition, studies indicate that user care regime and hygienic attitude differ among different users [19–23]. Knowledge of differences in the demographics of contact lens users in emerging markets can, firstly, assist the contact lens industry in developing and promoting various product types in different regional markets; secondly, help clinicians in understanding their prescribing pattern; and lastly, help guide the behavior of their clients when prescribing. Although prescribing trends do vary between countries, the overall need to promote forms of refractive correction is ubiquitous. Therefore, by understanding each country's limitations, practitioners, especially those who serve a diverse patient population from different nationalities, can better understand their patients as well as evaluate their own prescribing techniques by comparing them to other contact lenses practitioners worldwide.

This study, the first national survey among contact lenses wearers in Ghana, is therefore intended to provide information on the profile of contact lenses wearers and their attitudes towards contact lenses wearing. It will guide contact lenses practitioners to identify the target population, and the ophthalmic industry when designing information and educational materials on contact lenses.

2. Methods

2.1. Study area and population

The study was a descriptive cross-sectional survey conducted in the capital city of Ghana, Accra, in the Greater Accra Region. The region has a population of 1,658,937, constituting the most urbanised area in Ghana, and serves as the administrative and economic hub of Ghana [24]. There is a well-known urban–rural bias in eye care services in Ghana [25,26], and as such over 70% of contact lenses practitioners (optometrists and ophthalmologists) are located in Accra. Additionally, over 90% of Ghana's private eye care providers who are mostly involved in contact lenses practice are also located in Accra [24]. It can be concluded, therefore, that most contact lenses users live in Accra.

2.2. Sample, data collection and analysis

Low level of practice of contact lenses services has been recorded among eye care practitioners in Ghana [13]. As a result, only a few eye care facilities and optometric practices are known to offer contact lenses services to the general public. Based on this information and upon information gathered from the contact lens service provider facilities on the average number of contact lenses patients seen, five facilities comprising three optometric practices and two specialist eye clinics were selected for data collection. Data collection was carried out in two parts, first, a retrospective case review of all contact lenses patient folders were done to collect information on patients' demographics – age, sex and the highest level of education. Then, contact lenses wearers who visited the five selected contact lenses practicing facilities during a six month period of data collection were purposively sampled to complete a questionnaire about their contact lens wear and care.

Semi-structured questionnaires were designed, to guide and elicit responses from the participants about the knowledge, attitude, wear and care regimen of the contact lenses. The questionnaire had previously been used for similar studies [12,23], but was modified and piloted. Pretesting of the questionnaire was conducted in two phases. It was completed by five randomly selected contact lenses users from the University of Cape Coast, Ghana who did not participate in the final study. After the initial analysis by an experienced researcher, items that were not clear on the questionnaires were reworded and presented a second time before the final design was approved. Other variables considered relevant were included following a discussion among experienced optometrist involved in the study. The questionnaire consisted of two forms of questions: close-ended questions and open-ended question. Questionnaires were either supplied to eye care practitioners to administer to patients who reported to the eye clinic for follow up visits or administered by one of the authors stationed at the facilities which had a special day allocated for contact lens services.

Descriptive analysis of data was presented as percentages, frequencies, mean and standard deviation. Statistical analyses were carried out using Statistical Package for Social sciences version 21 software. (SPSS, Inc., Chicago, IL, USA). Chi-squared test was used to test associations between variables. A two-tailed p-value of less than 0.05 was considered statistically significant.

2.3. Ethical consideration

The study had no potential risk and adhered to the tenets of the Helsinki Declaration involving human research and ethical clearance which was given by the Institutional Review Board (IRB) of University of Cape Coast, Ghana. Permission was also sought from the heads of the surveyed eye care facilities and optometric practices before patients' data were collected. Participants who took part in the survey were provided a written informed consent before the questionnaires were administered, in order to keep them informed of the purpose of the study and also assured of anonymity and confidentiality as well as their rights to ask questions.

3. Results

3.1. A retrospective review of patients' profile

3.1.1. Demographics of subjects

Table 1 shows the distribution of the demographics among the total of 87 cases that were reviewed. They comprised of 46 females (52.9%) and 41 males (47.1%) with an age range of 15–68 years and mean age of 28.6 ± 9.4 years (95% CI = 26.6–30.6). The majority of the subjects (52.9%) were between the ages of 20–29 years. The difference in the mean age of the male respondents [31.0 ± 1.8 years (95% CI = 27.9–34.6)] and females [26.5 ± 1.1 years (95%

Table 1
Profile of contact lens users.

Age group in yrs.	Male (%)	Female (%)	Total (%)
19 - 20	5 (5.7)*	5 (5.7)	10 (11.5)
20 - 29	17 (19.5)	29 (33.3)	46 (52.9)
30 - 39	8 (9.2)	11 (12.6)	9 (29.8)
40 - 49	8 (9.2)	0 (0.0)	8 (9.2)
> 50	3 (3.4)	1 (1.1)	4 (4.6)
Education level			
Primary	0 (0.0)	2 (2.3)	2 (2.3)
Middle Sch./JSS/JHS *	0 (0.0)	3 (3.4)	3 (3.4)
Secondary/Tech/Vocational	14 (16.1)	6 (6.9)	22 (25.4)
Tertiary/Post. Secondary	27 (31.0)	35 (40.3)	60 (68.9)
Type of refractive error			
Myopia	23 (26.4)	15 (17.2)	38 (43.7)
Hyperopia	4 (4.6)	2 (2.3)	6 (6.9)
Astigmatism	5 (5.7)	14 (16.1)	19 (21.8)
No RE specified	9 (10.3)	15 (17.2)	24 (27.6)
The purpose for wearing contact lens			
Vision Correction	24 (27.6)	22 (25.3)	46 (52.9)
Cosmesis	5 (5.7)	18 (20.7)	23 (26.4)
Therapeutics	12 (13.8)	6 (6.9)	18 (20.7)
Total	41 (47.1)	46 (52.9)	87 (100)

*JSS = Junior secondary school, JHS = Junior high school. + RE = Refractive error.

CI = 24.6–28.4)] was significant ($p = 0.02$). All respondents had some level of education and the majority of them, 39 representing 44.8%, were students followed by bankers (8 which represents 9.2%). As shown in Table 1, the highest number of contact lens wearers, 60, representing 68.9% had higher level education followed by the secondary level representing 22 (25.4%), and only 5 (5.7%) having a middle or primary level of education.

3.1.2. Types and purpose of contact lenses used

Sixty-eight respondents (78.2%) reported using soft contact lenses while 19 (21.8%) were using rigid gas permeable (RGP) lenses. None were using hard or hybrid contact lenses. The highest proportion of the respondents - 46 (52.9%) - were wearing contact lenses for vision correction followed by 23 (26.4%) responding to have used them for cosmetic reasons and 18 (20.7%) for therapeutics, but none for sports reasons. The majority of those who used rigid gas permeable lens (14 representing 73.7%) used it for a therapeutic reason and 5 (26.3%) used it for vision correction. Among the male, 24 (58.5%) wore contact lenses for vision correction, 12 (29.3%) for therapeutics and only 5

(12.2%) used it for cosmesis. For the female, 22 (47.9%) wore contact lenses for vision correction, 18 (39.1%) for cosmesis and 6 (13.0%) for therapeutic reasons. There was a statistically significant difference between gender and purpose for wearing contact lenses ($p = 0.010$). Of the 68 respondents who wore soft lenses, 41 (60.3%) used it for vision correction, following by 23 (33.8%) for cosmesis purposes and 4 (5.9%) used it for a therapeutic reasons. On the type of refractive errors being corrected with the contact lenses, the highest was myopia 38 (43.7%) followed by astigmatism 19 (21.8%) and lastly hyperopia 6 (6.9%). There was a statistically significant difference between the gender and the type of refractive error being corrected ($p = 0.010$) (see Table 1).

3.2. Response to the questionnaire

3.2.1. Knowledge and attitude to wear

Overall, 42 subjects responded to the questionnaire and were made up of 19 males (45.2%) and 23 (54.8%) females with 31 (73.8%) being single and 11 (26.2%) married.

When asked about where they heard about contact lenses, out of the 42 respondents, 17 (40.5%) reported they heard it from optometrists, 11 (26.2%) from ophthalmologists, 7 (16.7%) from friends, 5 (11.9%) from the opticians, and 2 (4.8%) from an advert (Fig. 1).

Respondents were asked if they had previously worn spectacles before wearing contact lenses, 34 (81.0%) answered 'yes' while 8 (19.0%) answered 'no'. Those who answered 'yes' had various reasons for the discontinuation of spectacle wearing. Out of the 34 respondents with a history of spectacle wearing, 21 (61.8%) had discontinued using spectacles and were now exclusively using contact lenses while 13 (38.2%) still combined contact lenses with spectacles. Of those who were using contact lenses only, the reasons for the preference of contact lens over spectacles were; 8 (23.5%) respondents wanted to look different, 6 (17.6%) said it had been recommended by an eye doctor, 4 (11.8%) said it provided better vision, and 4 (11.8%) also said it provided an alternative to spectacles. Very few respondents gave reasons such as it being used as an alternative to correct astigmatism, dislike for spectacles, change from spectacles, for comfort, for convenience, spectacles are cumbersome among other reasons (see Table 2).

On their contact lenses wear schedule, out of the 42 respondents, 17 (40.5%) used lenses on a continuous (extended wear) basis, 12 (28.6%) used daily disposable lenses, 7 (16.7%) used flexible wear lenses and the rest were on the conventional (yearly) wear lenses (Fig. 2). On how long the contact lenses were worn daily, 20 (47.6%) respondents said they wore them for 6–12 hours, 14 (33.3%) wore them for 12–24 hours and 8 (19.1%) wore them for 1–6 hours. Nearly all 38 (90.5%) said they

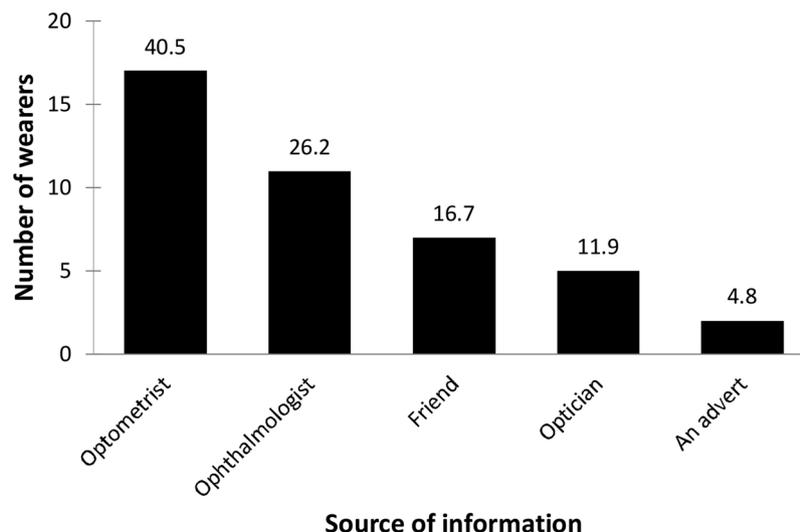


Fig. 1. Where wearers first heard about contact lenses.

Table 2
Reason for changing from spectacle to contact lenses among those with spectacle wearing experience (34).

Want to look different	8
Recommended by a Practitioner	6
Dislike for spectacles	1
Correct for astigmatism	1
Change from spectacles	3
Comfort	2
Convenience	1
Spectacles are cumbersome	1
Improve/better vision	4
Prefer contact lens now	1
Spectacles make me look old	1
Alternative to spectacles	4

did not sleep with contact lenses on, while 4 (9.5%) said they occasionally did sleep with contact lens on.

3.2.2. Contact lenses care regimen

Table 3 shows respondents attitude towards hygiene and care for contact lenses. Out of the 42 respondents, 30 (71.4%) reported that they clean their contact lenses according to the instructions given to them by eye practitioners during dispensing while 8 (19.1%) said they do so per the instructions on the patients’ information leaflet that comes with the product, and 4 (9.5%) said they referred to the internet. All of them confirmed washing the hands before fitting. When respondents were asked if they changed their solutions daily, out of the 42, 30 (71.4%) responded in the affirmative and 12 (28.6%) confirmed they did not change it on daily basis. Out of the 12, 5 (41.7%) said they changed their solutions every two days, 2 (16.7%) changed theirs every three days and 2 (16.7%) changed theirs every five days in a week and 3 (25.0%) failed to indicate how frequently they changed their solution.

When asked if they were informed or knew about the possible complications of wearing contact lenses, out of the 42 respondents, 33 (78.6%) responded YES, 4 (9.5%) responded NO and 5 (11.9%) were not sure. Subjects were asked if they had experienced eye problems due to contact lens wear. Out of the 42 respondents, 17 (40.5%) had experienced dry/gritty sensation in the eye, 11 (26.2%) experienced watering eye, 11(26.2%) experienced red eyes and 3 (7.1%) blurred vision (Fig. 3). When asked what they did or would do if they experienced problems due to contact lenses wear/storage, 25 (59.5%) responded that they would report to the eye practitioner, 11 (26.2%) said they would remove the contact lenses, 4 (9.5%) responded that they would do both, 1 (2.4%) would do nothing and another 1(2.4%) would discontinue the use of contact lenses for some time. On how frequently respondents go for follow up visits, 24 (57.1%) said they go for yearly follow-ups, 8 (9.0%) go for monthly visits, 7 (16.7%) visit every six months, 2 (4.8%) visit every three months and 1 (2.4%) every four

months

4. Discussion

4.1. Demographics of contact lenses wearers

Consistent with other studies, this study revealed a higher proportion of female users than males [21–23]. Studies on global demographics of contact lens prescriptions show that women comprise about two-thirds of all contact lens wearers worldwide [18], but regional figures could vary from around 57–59% in Europe [18] to 75% in Asia [10,11]. Variations in the balance between males and females contact lenses users have been attributed to a variety of cultural influences. Here, this is rather attributed to the larger proportion of females desirous of contact lenses for cosmetic reasons and the fact that the greater percentage of females are successful contact lenses wearers than males among new users [27]. Females’ preference for contact lenses over males is also consistent with the strong perception of contact lenses as a fashion item, similar to facial cosmetics and, therefore, more females tend to use it. Students from tertiary schools and formal workers such as bankers formed the higher proportion of the contact lenses users in this study. These groups can be considered to be derived from a higher socio-economic class in terms of the level of education, income or subsistence and occupation in developing countries. Even though some students may not be employed, they derive their subsistence from the upper and middle class of the economic strata. Further, generally, students who have access to information are more desirous to follow modern trends, and therefore relatively use contact lenses to enhance their appearance. More than two-thirds (71.4%) of the study population had tertiary level education which is higher than that found among spectacle wearers (65%), but lower than the nearly 94% found among those who knew about contact lenses in a study by Abokyi et al. (2017) in Ghana. In 2015, Ghana’s literacy rate was 76.6%, with a notable gap between men (82.0%) and women (71.4%), but only 5% had tertiary, 10.3% had secondary, and 48.9% had junior secondary and primary levels of education [24]. The high level of education among contact lens wearers in this study translates into their ability to seek for and understand information regarding alternatives to the vision correction. The results again are consistent with studies that showed that contact lenses wearers, in general, have a higher education level, and are often from higher social-economic status (SES) [28,29]. With contact lenses usage comes on-going fees such as fitting cost, aftercare consultations, and regular replenishment of contact lenses supply and care system [30]. Individuals with higher SES are more likely to afford such expenses. The relationship between individual economic status, purchasing power, health care usage, and outcome in developing countries is well documented and is said to be fluid [31]. For instance, Ghana has recently been ranked as a middle-income

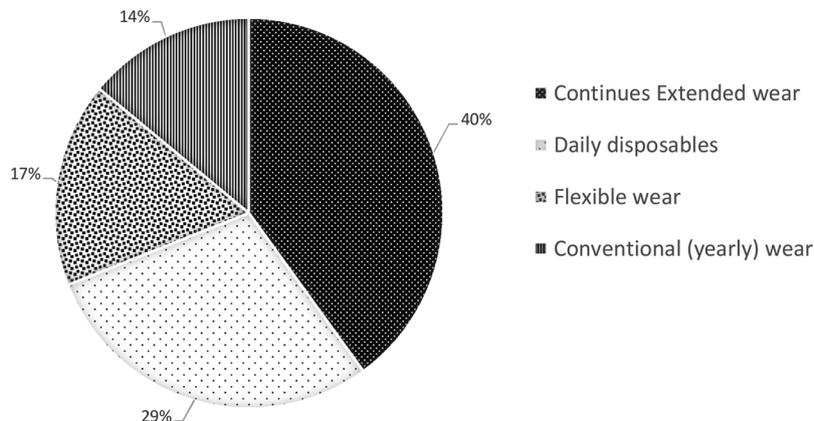


Fig. 2. Lens wear schedule of Wearers.

Table 3
Altitude towards hygiene and care of contact lenses.

Behaviour	Answer	Gender		Age group (yrs.)							Educational level						
		Male	Female	χ^2	P	10 - 19	20 - 29	30 - 39	40 - 49	≤50	χ^2	P	Middle	Secondary	Tertiary	χ^2	P
How often do you replace your contact lens	Daily	4(21.1) [†]	8(34.8)	13.6	0.004 [*]	0(0.0)	7(29.2)	5(50.0)	0(0.0)	0(0.0)	17.1	0.121	0(0.0)	4(36.4)	8(26.7)	4.7	0.585
	Extended	13(68.4)	4(17.4)			2(50.0)	7(29.2)	4(40.0)	3(100.0)	1(100.0)			1(100.0)	5(45.5)	11(36.7)		
	Flexible	0(0.0)	7(30.4)			0(0.0)	7(29.2)	0(0.0)	0(0.0)	0(0.0)			0(0.0)	0(0.0)	7(23.3)		
Do you sleep with your contact lens on?	Yearly	2(10.5)	4(17.4)			2(50.0)	3(12.5)	1(10.0)	0(0.0)	0(0.0)			0(0.0)	2(18.2)	4(13.3)		
	Yes	1(5.3)	3(13.0)	0.7	0.393	0(0.0)	3(12.5)	1(10.0)	0(0.0)	0(0.0)	1.1	0.896	0(0.0)	1(10.0)	3(10.0)	0.2	0.944
Do you wash your hands thoroughly before wearing your contact lens?	No	18(94.7)	20(87.0)			4(100.0)	21(87.5)	9(90.0)	3(100.0)	1(100)			1(100.0)	10(90.0)	27(90.0)		
	Yes	19(100.0)	22(95.7)	0.8	0.358	4(100.0)	24(100.0)	9(90.0)	3(100)	1(100.0)	3.3	0.512	1(100.0)	10(90.0)	30(100.0)	2.9	0.236
Do you change your solution daily?	No	0(0.0)	1(4.3)			0(0.0)	0(0.0)	1(10.0)	0(0.0)	0(0.0)			0(0.0)	1(10.0)	0(0.0)		
	Yes	17(89.5)	13(56.5)	5.6	0.019 [*]	4(100.0)	14(58.3)	9(90.0)	3(100.0)	0(100)	9.1	0.041 [*]	0(0.0)	6(54.5)	24(80.0)	5.2	0.047 [*]
Were you informed about complications of not changing solution?	No	2(10.5)	10(43.5)			0(0.0)	10(41.7)	1(10.0)	0(0.0)	1(100.0)			1(100.0)	5(45.5)	6(20.0)		
	Yes ⁺	18(94.7)	15(65.2)	5.7	0.049 [*]	4(100.0)	16(66.7)	9(100.0)	3(100.0)	1(100.0)	5.6	0.702	1(100.0)	11(100.0)	21(70.0)	4.6	0.333
Do you clean your contacts according to instructions given?	No	0(0.0)	4(17.4)			0(0.0)	4(16.7)	0(0.0)	0(0.0)	0(0.0)			0(0.0)	0(0.0)	4(13.3)		
	Yes	18(94.7)	20(87.0)	0.7	0.393	4(100.0)	21(87.5)	9(90.0)	3(100.0)	1(100.0)	1.1	0.896	1(100.0)	11(100.0)	26(86.7)	1.8	0.413
	No	1(5.3)	3(13.0)			0(0.0)	3(12.5)	1(10)	0(0.0)	0(0.0)			0(0.0)	0(0.0)	4(13.3)		

* P < 0.05 is significant.

⁺ The analyses of these data removed 5 who did not respond to that questions.

[†] Percentages are in parenthesis.

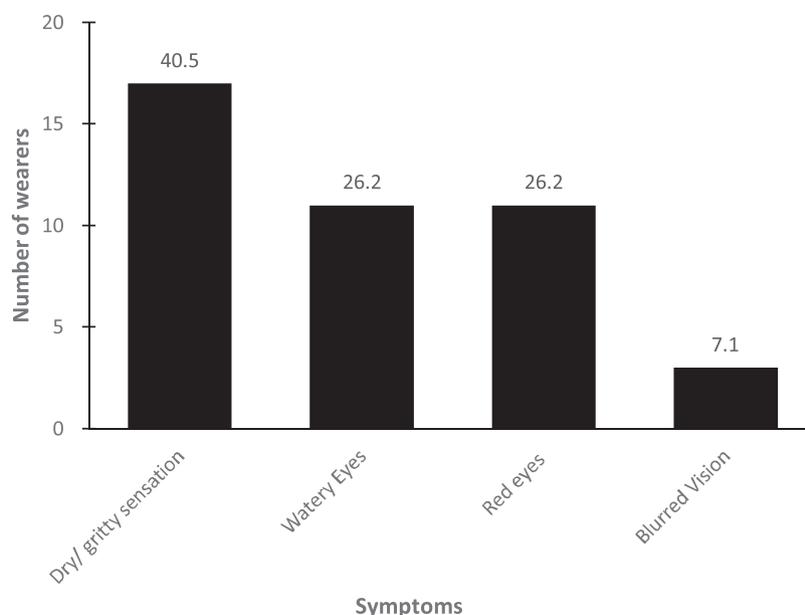


Fig. 3. Symptoms experienced by contact lenses wearers.

country at a per capita income of about \$1820 from lower a middle-income country [32]. In the not too distant past, contact lenses practice was rudimentary, but relative improvements in SES status in many developing countries means more people are likely to be able to afford and shift to the use of contact lenses.

4.2. Type of contact lenses dispensed

The highest number (78.2%) of contact lenses wearers used soft contact lenses. This result is consistent with reports that the majority of contact lenses prescribed today are soft lenses compared to rigid lenses [33,34]. Soft lenses are obviously more preferred because they have advantages of being soft, oxygen permeable, they are most comfortable and are well tolerated by most wearers. Similar studies have also reported a high number of daily or monthly disposable soft contact lens use among wearers [21,35–37].

4.3. The purpose for wearing contact lenses

Apart from refractive correction and cosmetics, studies have shown contact lenses usage as a therapeutic modality for corneal pathologies has increased tremendously over the years [20,21]. In this study, more than half of contact lenses wearers (52.9%) wore contact lenses for refractive error correction. As this study was conducted in a clinic setting, it is obvious most people visited the eye clinics for vision correction purposes and this could have accounted for the number of refractive corrections. The results run contrary to other studies where cosmetics [22,30,36] was the main purpose for wearing contact lenses. A similar research in Nigeria, a nation with fast-growing contact lenses market with a similar setting as Ghana, also reported vision correction as the purpose for wearing contact lenses [37]. It may be that in emerging markets, consumers' choice to wear contact lenses for other reasons other than for optical correction and therapeutic purposes is limited by the non-availability of contact lens products on the open market, such as the internet. Practitioners who prescribed the bulk of contact lenses, were most influential in determining consumers' choice and purpose for wearing contact lenses [21]. In this study, over a quarter of the respondents (26.4%) wore contacts lenses for cosmetic reasons, while the rest used them for therapeutic reasons to manage keratoconus or as bandage lenses. However, more females (39.1%) wore contact lenses for cosmesis reasons compared to males (12.2%).

The highest number of contact lenses worn for vision correction was used to correct myopia (43.7%). This was also reported in similar studies [29,37]. Myopes are long known to prefer contact lenses because they benefit from the increased magnification that contact lenses provide as compared with their spectacle corrections, while the reverse may hold true for hyperopic patients [38]. Contact lenses also have been found to be promising in delaying myopia progression [39].

4.4. Knowledge and attitude to wear

The majority of contact lenses users in this study came to know about contact lenses through an optometrist (40.5%). This corresponds with similar studies conducted in Singapore and Australia [21,28]. Optometrists are the primary optical care providers in many jurisdictions and provide most of the optical correction of the populations they serve. In Ghana, the higher number of optometrists involvement in contact lenses practice is as a result of recent advances in clinical practice, and the increasing need of more sophisticated patients for alternative corrections to refractive error other than spectacles. Over the past two decades too, the number of optometrists have increased rapidly from 5 in the 1980's to the current number of about 326 who are working in both government and private facilities across the country [1,13]. Apart from the desire to enhance one's looks, the practitioners' recommendation seems to be the major driving force for patients who opt for contact lenses. This study also found that patients were desirous to have contact lens experience, even for those wearing spectacles. One-third of patients who have had spectacles wearing experience changed over to contact lenses to look different, while others wanted an alternative to the traditional use of glasses. On the other hand, as alluded to, preference to consider contact lenses for cosmetic purposes has been cited in various studies so it was not surprising even among spectacle wearers [20,21,30,36]. This suggests that eye practitioners have an important role to play when it comes to educating patients on the alternative forms of correcting their vision before dispensing.

4.5. Care regimen

Some contact lens users wore their contact lenses up to 12 h a day. This is contrary to the general best practice that contact lenses should not be worn for more than 10–12 hours in a day, as wearing lenses

longer than that may cause the eyes to become uncomfortable, red and prone to infection [30]. More users were also on the continuous (extended) wear replacement schedule as opposed to the daily wear. Though similar studies found more patients using soft lenses on continuous wear replacement schedules [36], in this study, this could be attributed to the fact that daily wear options are not readily available in the market. The risk of complications associated with extended wear can be reduced by proper lens fitting, proper patient instruction, proper lens care and maintenance, and regular aftercare visits [40]. Sleeping in contact lenses can lead to an increased risk of severe eye infection so it was not surprising that over 90% of users in this study did not sleep with contact lenses on.

There was generally good contact lenses care and hygiene practice among the users. Nearly all respondents confirmed they wash their hands before applying their contact lenses, greater than those found in developed countries [21,30,41]. All the users also were following the regimen of cleaning and maintenance of their contact lenses by gathering information from different sources. This perhaps draws attention to practitioners and manufacturers to diversify the media through which they disseminate information concerning contact lenses use to make it easily accessible to different consumers. For instance, it is absolutely vital to change the storage solution as there is always the possibility of contamination [40–42]. Even with this possibility, 28.6% of respondents did not change it daily but rather every other day.

Informing the contact lenses user about the complications related to its use is one of the many roles of an eye care practitioner [43]. In this study, 78.6% were informed about the possible complications of wearing contact lenses. This can be attributed to the fact that the study was undertaken in eye clinics which are manned by eye care practitioners. Though nearly all users had experienced some symptom associated with the use of contact lenses, only 59.5% confirmed they reported to an eye practitioner while others would avoid using the lenses. This indicates the respondents are aware of the severity of complications if they continued to use contact lenses while experiencing some discomforts. The majority (57.1%) of respondents go for yearly follow up visits, undermining the importance of regular follow-up considering the high number of reported symptoms.

4.6. Conclusion

This study has some limitations. Access to contact lenses user population was difficult since very few visit the eye clinics for aftercare visits or to purchase contact lenses products. There is the possibility of under or over-estimation as some results were analysed based on subjective responses from the participants. Notwithstanding, this study found that contact lenses are mostly used by young adults. The type of contact lenses mainly dispensed in Ghana is mostly soft lenses for myopic correction and cosmetic reasons. Rigid gas permeable contact lenses are also dispensed but mostly for therapeutic reasons. The lack of superior contact lens products such as toric lens designs, silicone hydrogels, multifocals, and presbyopic fits demonstrates a newer contact lenses market. The contact lenses wearers in this study by proportion had a very good attitude to wear and care regimen.

Eye practitioners should suggest the use of contact lenses as an alternate form of vision correction especially for individuals who are in their early adulthood since they are more likely to prefer contact lenses over spectacles. Further studies should be carried out in other emerging markets of contact lenses wear to provide more databases about contact lenses wearers in developing countries.

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