Contact lens prescribing patterns in Abuja, Nigeria

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Abstract

Purpose: To determine contact lens prescribing patterns among optometrists in Abuja, Nigeria.

Methods: One hundred and twenty registered optometrists were randomly selected from practices in Abuja and were surveyed about contact lenses prescribing patterns in their practices from January to December 2016. Demographic data for each patient prescribed with contact lenses were taken. In addition, data relating to lens type, design, replacement methods and the care regime advised to each patient were recorded. The data collected were analysed using the Statistical Package for Social Sciences (SPSS).

Results: The optometrists that participated were 38% males and 62% females. A total of 321 contact lens were fitted among patients aged 15 to 55 years with a mean age of 27.3 ± 6.6 years by the optometrists. Two hundred and ninety-two (91%) patients were females and 29 (9%) were males. A good number of the patients (86.6%) were between 20 to 40 years and most (91.8%) contact lenses prescribed were daily wear. Conventional soft contact lenses (96.9%) and 3 month replacement modality (70%) were the most prescribed contact lens and modality of wear respectively. Majority (78.4%) of the contact lenses prescribed were spherical contact lenses and a good number (62.5%) were refits. Most (78.2%) contact lenses fitted were for refractive purposes. Multipurpose lens care system was the most (98.2%) prescribed lens care system.

Conclusion: This survey showed that contact lens prescribing pattern in Abuja follows the global trend of contact lens prescribing.

Keywords: Contact lens, prescribing pattern, Abuja, Nigeria

Introduction

Contact lenses provide a convenient way of correcting refractive error, and they offer great advantages over spectacles in many ways.[1] Industry estimates, showed that there are approximately 140 million people wearing contact lenses worldwide.[2] Baird's 2016 data suggest that the worldwide contact lens market value currently stands at approximately $7.6 billion with the U.S. market valued at slightly more than $2.5 billion.[3] This not only makes contact lenses an important part of the eye care but also a viable market of the eye care profession, which makes it important to know practitioners' contact lens prescribing patterns in the study area.

For the past decade, substantial changes have taken place in the contact lens industry such as the introduction of novel materials, lens care solution systems and revised approaches to frequency of lens replacement

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and modality of wear (daily or overnight).[4] These changes inevitably impact the contact lens wearing characteristics of patients, and also influence the way in which contact lenses are prescribed by practitioners especially in relation to spectacles.[4] Most contact lens patients are prescribed soft lenses, with spherical lens designs being the most commonly fitted, followed by toric lenses.[5] In view of the availability of contact lenses in a wide range of powers, parameters, designs, materials, enhanced performance and success rates, Africa still has the lowest contact lens market in the world and continues to lag behind other regions.

Nigeria has made significant progress in developing optometry but not so much in contact lens practice. This could be due to poor knowledge of contact lens practice and cost which may lead to poor utilisation of contact lenses as an alternative to spectacles. There is a paucity of literature on current patterns of prescribing contact lens in Nigeria. Therefore, this study was conducted to explore contact lens prescribing patterns among optometrists in Abuja, Nigeria in order to provide early insights into the contact lens market and promote active involvement and advancement of contact lens practice in Nigeria. The data will assist in further understanding of the local contact lens market and to compare it with other developed markets.

Methods

It was a descriptive cross-sectional study that involved the use of questionnaires to determine contact lens prescribing patterns in Abuja, Nigeria. Permission to conduct this study was obtained from the Research Committee, Department of Optometry, Madonna University and the Nigerian Optometric Association (NOA) Abuja chapter.

Abuja is the capital of Nigeria and is located in the North central of Nigeria with a population of 1,405, 201(2006 census) and made up of six area councils namely; Gwagwalada, Kuje, Bwari, Kwali, Abaji and the Abuja Municipal[6] (Ibeneche et al, 2018). The number of registered optometrists and optometry clinics in Abuja were estimated to be 249 and 43 respectively as at the time of the study. Convenient sampling method was used in this study as only registered optometrists and optometry clinics who wished to participate in the study were included and all those whose registration status could not be confirmed at the time of the survey were excluded. Also other non optometrist contact lens practitioners (contact lens peddlers) were excluded from the study.

A total of 120 questionnaires were distributed by the researcher to all registered optometrists in Abuja who wished to participate in the study with the help of NOA Public relation officer. The information contained in the questionnaire included a number of background details and contact lens type, lens design, replacement method and care regime advised for the first contact lens fits (to check consecutively pattern of prescribing) performed for a period of one year (from January to December 2016) (Table 1). The optometrists were requested to return the questionnaire irrespective of the number of patients seen (even if fewer than 10). A total of 321 contact lens patients aged 15 to 55 years with a mean age of 27.3 ± 6.6 years were seen by 28 optometrists working in private clinics and public hospitals in Abuja, Nigeria. Data from the returned questionnaires were manually entered into an Excel (Microsoft Corporation, Redmond, WA, USA) spread sheet.

Table 1: Categorization of main factors and options for each category

Lens type	Conventional soft contact lens
	Rigid gas permeable (RGP)
Lens design	Spherical
	Toric
	Multifocal
	Cosmetic
	Orthokeratology
Modality of wear	Daily wear
	Extended wear
Replacement	Daily
	2 weekly to 1 month
	3–6 month
	12 months
Care regime	Multipurpose (MPS)
	Hydrogen peroxide

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Data analysis

The data obtained were imported into the Statistical Package for Social Sciences Software (SPSS) programme version 20 for analysis. The results were calculated in percentages and are presented in tables and figures. Pearson chi-squared test was used to establish relationships between the variables.

Results

Demographic details of the optometrists

Out of 120 questionnaires distributed to optometrists in Abuja, Nigeria, only 28 optometrists comprising of 11 (38%) males and 17 (62%) females returned the completed questionnaires, giving a response rate of 23.3%. Most (72%) of the optometrists had only first degree (Doctor of optometry), 10% did residency and specialist programs in contact lens while the remaining 18% were still doing their residency in contact lens. A good number of the optometrists (85%) had between 10 to 20 years' experience in the practice of optometry, 10% had more than 20 years' experience and 5% had less than 10 years' experience. Majority (95%) of them were in private practice and 5% were in government hospitals.

Demographic details of contact lens wearers

A total of 321 contact lens patients aged 15 to 55 years with a mean age of 27.3 ± 6.6 years were seen by 28 optometrists working in private clinics and public hospitals in Abuja, Nigeria. Two hundred and ninety-two (91%) patients were females and 29 (9%) were males. Majority 278 (95%) of the patients were between 20 to 40 years (Figure 1). The use of contact lenses was found to be significantly associated with females and age using Pearson chi square (p = 0.043, p = 0.026)

Pearson Chi-Square test showed a significant relationship between the use of contact lens and occupation (p =0.0001). Nearly half (48%) of the contact lens wearers were students (Table 1).

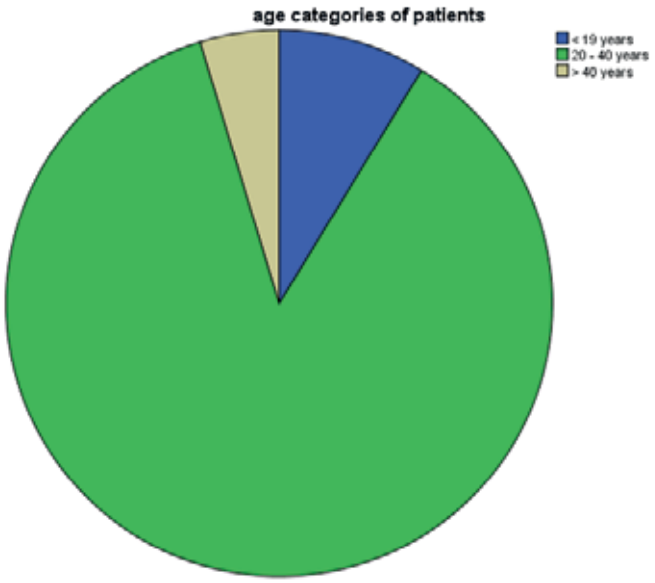

Figure 1: Age distribution of contact lens wearers

Table 1: Occupational distribution of contact lens wearers

Occupation	Frequency	Percentage frequency (%)	P-value
Students	154	48	0.0001
Lawyers	67	20.9	0.0005
Bankers	43	13.4	0.0065
Administrators	35	10.9	0.0073
Beauticians	16	5	0.0079
Traders	3	0.9	0.0084
Housewives	3	0.9	0.0084
Total	**321**	**100**	

Chi-square test analysis

Contact lens practice trends

Majority (94%) of the optometrists reported that contact lens patients make up 20% of the total patients seen in their various clinics annually while 6% of optometrists interviewed recorded less than 20% contact lens patients in a year.

Lens types

Three hundred and eleven (96.9%) contact lenses prescribed were conventional soft contact lenses while 10 (3.1%) were RGP. The major indication for prescribing contact lens was high refractive error 251 (78.2%) and 70 (21.8%) were for cosmetic purposes.

Contact lens designs

Spherical contact lenses were the most (78.2%) prescribed contact lens design (Table 2), followed by cosmetic contact lenses 46 (14.2%) and toric contact lenses 11(3.4%).

Modality of wear and frequency of contact lens replacement

Many (295) of the contact lenses prescribed were for daily wear and 19 (8.2%) were for extended wear. Three months replacement (69.8%) was also found to be the most prescribed lens replacement (Table 3). Two hundred (62.5%) contact lenses prescribed were refits and 37.5% were new fits.

Table 2: Contact lens designs

Contact lens design	Frequency	Percentage frequency
Sphere	251	78.2
Cosmetic	46	14.3
Toric	11	3.4
Multifocal	7	2.2
Therapeutic	6	1.9
Total	**321**	**100.0**

Table 3: Modality of wear and lens replacement

Modality of wear	Frequency	Percentage frequency
3 months	224	70.0
1 month	52	16.2
6 months	36	11.2
12 months	8	2.5
Daily	1	0.3
Total	**321**	**100.0**

Lens care system

Multipurpose solutions were the most preferred lens care system by eye care practitioners (97.8%), followed by peroxide systems (2.2%) while no practitioner reported prescribing of chlorine, enzyme or heat-based lens care systems.

Discussion

Currently, there is no data available regarding the total number of contact lens practitioners in Nigeria. There is also a paucity of literature regarding profile distribution of optometrists in Nigeria. This study involved 38% (11) males and 62% (17) female optometrists which reflects the gender distribution of optometrists in Nigeria. Level of qualification showed most contact lens practitioner in Abuja had only first degree (Doctor of Optometry) and most of them are in private practice and have over ten years experience in the profession. Similar findings were reported in other studies.[4, 5,7] This could be due to lack of interest to further their education since they already have well established practices. This could also be that Doctor of Optometry (OD) is the minimum qualification to practice Optometry in Nigeria and there is no additional credentialing required for contact lens practice in the country.

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The results from this survey showed that contact lenses prescribed by eye care practitioners in Abuja included conventional soft contact lenses, RGP and bionic contact lenses with their designs being spherical, toric, multifocal, cosmetic and therapeutic. Most contact lens wearers were females (91%) and only 9% were males. Similar findings were recorded in reviews of contact lens prescribing habits in twenty seven countries including: Australia, Canada, United Kingdom, United States of America, Germany, Greece, Italy, Japan, Netherland, New Zealand, Sweden, Singapore and Norway except Spain where there was 48% female contact lens wearers and 52% male[7-8] Thiteet al[9] also showed that 67% of contact lens wearers in India were females. Moreover, the use of contact lenses has always remained high in females than males since the inception of the international prescribing trends project which began in 1996.[10] The high tendency of contact lenses wear among females in this study is similar to a report in Jordan (Middle East region)[11] which attributed it to a strong desire to avoid the use of spectacles or to alter the cosmetic appearance of the eyes with coloured contact lenses, with the former relating to cultural issues associated with relationships and marriages. Moreover, Tabushi et al[12] suggested that this finding could be because women especially the younger ones, give more value to aesthetic appearance.

The use of contact lens was high among patients between 20–40 years and students. Similar findings were recorded in studies in Brazil[12], Japan[13] Singapore[14] and USA.[15] This could be attributed to better optical, occupational, sports and cosmetic benefit of contact lens.

A study in Brazil[12] showed that keratoconus was the major indication for prescribing contact lens among contact lens practitioners. Contrary to that, the present study found high refractive errors as the major indicator to prescribing contact lenses. Also another study[16] in Santa Casa deMisericordia do Rio de Janeiro recorded anisometropia as the major indicator. Contact lens provides good aesthetic appearance and adaptation when compared to spectacles which explains why it is the major optical device of choice for managing the above mentioned conditions.

Majority (94%) of contact lens practitioners in Abuja indicated that 20% of their optometric practices comprise of contact lens wearers compared to 40% and 60% reported by Moodley[10] and Nichols[17] in a typical practice base in KwaZulu-Natal South Africa and USA respectively. Variations in the findings could be due to socioeconomic factors, poor awareness, skills and knowledge of use of contact lens as an alternative to spectacles in Nigeria.

Conventional soft contact lenses are more available, affordable, comfortable, easy to handle, have high oxygen transmissibility and less hypoxia related complications compared to RGP lenses. This could possibly explain the reasons for high prescription rate of 96.6% for these lenses compared to 5% for RGP in the current study. Similar findings were recorded in Canada[18], Hong Kong[19] and Australia.[20] However; studies in Brazil[12, 16, 21] reported more than 60% prescription rate for rigid contact lens. Lack of proper information on the latest development, experience and knowledge of the optometrists in the special application of rigid gas permeable lenses in the management of keratoconus, high astigmatism and

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orthokeratology compared to silicon hydrogel could be responsible for the differences in the findings. Also major indications for prescribing contact lenses in different places could be the reason for the variation in findings. For example, the major indication for the present study was high refractive error as against keratoconus and anisometropia recorded in studies in Brazil. [12, 16, 21]

Orthokeratology did not account for any percentage of the contact lenses prescribed. This could be due to lack of practitioners skills and experience in that area as it is still new in Nigeria. Daily wear contact lenses have become increasingly popular among contact lens practitioners in Nigeria due to its availability, cost, effectiveness and less risk of complications as evidenced in this study. This is consistent with studies in Australia[5, 7, 8] Singapore[14] and Maldives.[22]

Only one optometrist reported dispensing bionic contact lenses in Abuja. This could be due to the unavailability of these lenses in the local market, cost factors, less satisfactory visual outcome, practitioners' hesitation due to increased risk of complications and lack of proper skills in fitting special lenses. Contact lens options should be presented to all patients to increase awareness of the different applications and advantages of contact lenses in vision correction and rehabilitation as well as limitedness of associated risk factors.

Practitioners preferred prescribing spherical lenses (78%) for astigmatic patients rather than toric lenses. Similar finding was reported in a 2005 contact lens survey in the UK[23]. This can be explained by the complaints and less satisfactory visual outcome associated with toric extended wear lenses. In addition, higher cost of toric contact lenses in comparison to spherical lenses, lack of patient awareness of using toric contact lenses, practitioner skills and enthusiasm, longer fitting chair time, and the limited availability of the complete range of prescriptions offered to practitioners by manufacturing companies could have also influenced these results.

Despite improvements in multifocal design and an increase in available multifocal options in recent years, contact lens practitioners in Abuja, Nigeria are under-prescribing multifocal lenses compared to advanced nations with regards to the correction of presbyopia. The percentage of multifocal lenses prescribed in our study was low (2.2%). This is confirmed by the average age of patients wearing contact lenses in this study with those above 40 years corresponding to less than 5%. A study in India[9] reported lack of patients 'awareness, cost, trials and limited power range as the major barriers to fitting multifocal contact lenses. Although not investigated here, these barriers may apply to the Nigerian population too. Eye care practitioners should keep abreast with current advances in contact lenses in order to provide quality services and present greater variety of wearing options to their patients.

Three months disposable contact lenses were the most (69.8%) prescribed modality of lens wear in this survey. Studies in Australia[5, 7, 8] and Jordan[11] recorded monthly disposable as the most prescribed contact lens modality. However, a study in the USA[15] reported bi-weekly replacement lenses as the most prescribed due to advocacy by the practitioners and contact lens industries in the USA. Affordability and availability could be the reasons for the differences in the findings.

Majority of the optometrists in Abuja preferred and prescribed multipurpose solution (MPS) for lens care system

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due to the ease of use, high efficacy and affordability in comparison to hydrogen peroxide (H_2O_2) systems, where high compliance is required and risk of corneal toxicity from partially neutralized H_2O_2 exists. Similar findings were reported from international surveys in Australia[5, 7, 8] and the US.[15]

Limitations of study

This study has some inherent limitations which must be acknowledged. There was a low response rate. Moreover, the small sample size of 321 patients obtained from 28 optometrists that responded to the questionnaires significantly reduced the statistical power of the findings. Although, this setting has unique demographics for studying such outcomes, our results may not be reflective of contact lens trends in the general population. Notwithstanding, the study used a sound methodology which compares favorably with previous studies.

Conclusion

This study has established the baseline contact lens prescribing patterns in Abuja, Nigeria. It also showed that orthokeratology and bionic contact lenses are still under prescribed in Nigeria. This information is important to inform optometrists and the contact lens industry about current trends and challenges in the industry which will allow for better future planning.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

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