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Benefits Paid to Optometrists by Medical Schemes, South Africa

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Abstract

Background: Optometry services generally form part of the preventative benefits package in the health sector delivery. Studies have also shown that early access to such services prevents or even reduce eyesight loss in the long term. Funding these services remains a key challenge in medical schemes, and this benefit remains one of the underfunded benefits. The Council for Medical Schemes annual report depicts that optometrists' benefits account for less than two percent of all benefits paid. This may be because medical schemes only contribute to basic visual needs such as eye tests, lenses, and frames. The complexity of product design, benefit limits, networks short or co-payments makes it even more difficult for members to understand the funding model of these benefits.

Objectives: The primary objective of this study was to assess the distribution of optometrists claiming from medical schemes. The study's secondary objective was to conduct multivariate analysis to determine factors that affect optometrist expenditure in medical schemes.

Setting: The study was conducted in the medical schemes sector, mainly for optometrist's benefits paid by medical schemes for services rendered in South Africa.

Methods: The study entailed a retrospective comparative analysis of medical schemes' claims data associated with benefits paid for optometry services. The review period was 2016-2020 data sourced the CMS annual report at aggregated scheme level than at benefit option level. The analysis included claims data from 61 medical schemes. Fifteen were open schemes, and forty-six were closed schemes.

Results: The analyzed schemes accounted for 8.1 million lives of 2020 beneficiaries, accounting for 91% of all beneficiaries over the same period. Of these, 1.1 million utilized optometrist benefits, which accounted for 13% of beneficiaries included in the study.

The average expenditure per utilizing beneficiary per annum was higher in closed schemes than open schemes, R2 987 (SD=1039) and R2 317 (SD=708), respectively. A Generalized Linear Model employed showed the effect of the sector (p-value =0.0334) and size–small schemes *vs.* large schemes (p-value =0.2373) for and small schemes *vs.* medium schemes (p-value =0030). The range of benefits paid was wider in small schemes than large and medium schemes R1 302 to R5 532 compared to R1 275 to R4 4473 *vs.* and R938 to R3 900, respectively. However, the operating model was not statistically significant to benefits paid for optometrist services (p-value =0.2377). The co-payment level paid by members was 18%, higher in open schemes *vs.* closed schemes, 23% *vs.* 13%, respectively.

Conclusion: The study found a disparity in the optic benefits funding model employed by medical schemes; open schemes mainly fund this benefit from saving benefits while closed schemes seem to be funding these from risk benefits. Open scheme members were subjected to higher co-payment levels than closed schemes, thus depicting better funding of these benefits. The study also revealed the size factor as one of the deterministic factors of optometry benefits, where small schemes paid higher benefits than medium and large schemes. The study recommends the capping of co-payments, in particular in open schemes. The study recommends reviewing the funding model in restricted schemes that fully fund optometry benefits from the risk pool.

Keywords: Optometry; Benefits paid; Risk; Personal medical savings account; Medical schemes; South Africa

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Introduction

Optometrists are Primary Health Care (PHC) medical service practitioners of the eye. Visual system services generally form part of the preventative benefits package in the health sector delivery [1-3]. Optometrists are primary healthcare providers responsible for eye examinations to detect visual errors and provide clear, comfortable vision [1,4]. Eye care is mainly offered at the PHC level [5]. Access to these services remains a challenge as there is a skewed distribution of optometrists relative to the population. Approximately 80% of vision impairment can be prevented and treated [6-11]. Recent data from the World Health Organization estimates that at least 2.2 billion individuals worldwide have near or far vision impairment out of 7.9 billion populations [7]. According to Enactus, 90% of people with vision impairment are in low- and middle-income countries [8]. High levels of vision impairment in low and middle-income countries result from the uneven distribution of optometrists relative to the population [9]. Figure 1 shows that high-income countries significantly outstrip sub-Saharan Africa, with a median of 156 versus two optometrists per million populations. A study conducted by Naidoo further supports this, Morjaria, block et al. [10], who found low optometrist-to-patient ratios in low-income countries strongly associated with a higher magnitude of blindness and vision impairment. The International Agency for the Prevention of Blindness (IAPB) estimated approximately 9,000 in the African continent; South Africa and Nigeria accounted for a significant proportion of these, each having 3,500 and 2,560, respectively [12-14].

Similar disparities are notable when looking at private sector *vs.* public sector, urban relative to rural areas where high levels of vision impairment are also notable in rural areas and public sector [10,15,16]. In their study, Gilbert and Patel [17] highlight the inadequate eye care professionals and their disproportionate distribution across nations and the absence of eye care facilities in the much-needed rural areas. The Kenyan Optometrist's view on the future of Optometry and Prospective Impact on Public Health found that most optometrists work in private sectors [18]. The study showed that nearly eighty percent 78.9% were practicing in the private sector compared to the 15.8% in the public sector [18]. There is further evidence that most practicing public sector optometrists are mainly located in the Limpopo and KwaZulu Natal, these provinces accounts for (135/239) 56% and (38/239)16% of optometrists, respectively [15,19]. The availability of optometry universities in these provinces might contribute to a high concentration of optometrists in the province [15]. However, another body of literature that depicts a slightly higher number of optometrists in KwaZulu Natal, Ramson [20], depicted 51 public sector optometrists in 2014. There are over 3000 registered optometrists in South Africa [21], with most practicing in the private sector.

Brien Holden Vision Institute Foundation [22] estimates that 97% of optometrists practice in the private sector, accounting for less than 16% of the population [15,23]. The optic market is mainly dominated by lenses-46 percent and frames-31, accounting for over seventy-five percent of the market combined [21]. Consultation is the third prominent component followed by contact lenses, with 17 and six percent respectively [21].

Background

Optometrist benefits-medical schemes

The Council for Medical Schemes annual report depicts that optometrists' benefits account for 1.7% of benefits paid [23]. Medical schemes only contribute to basic visual needs such as eye tests, lenses, and a basic frame, thus limiting what a member is covered for [24,25]. Sub-limits per beneficiary or family per benefit options are often than not, as depicted in the example given (Table 1).

Optometry cover for eye tests and basic frames and lenses is mainly funded from Day-to-day benefits *via* a network of providers, and benefits typically include [26]. Medical schemes fund these either from the risk-benefit or savings benefit and this model differs across medical schemes. Benefit design co-payments include all co-payments that result from applying benefit design rules, excluding charges above the scheme's reimbursement rate benefits [27] (Figure 2).

Operating model and networks

Medical schemes outsource administrative functions to third-party administrators and Managed Care Organizations (MCOs), and brokerage firms in certain circumstances [28]. Medical schemes

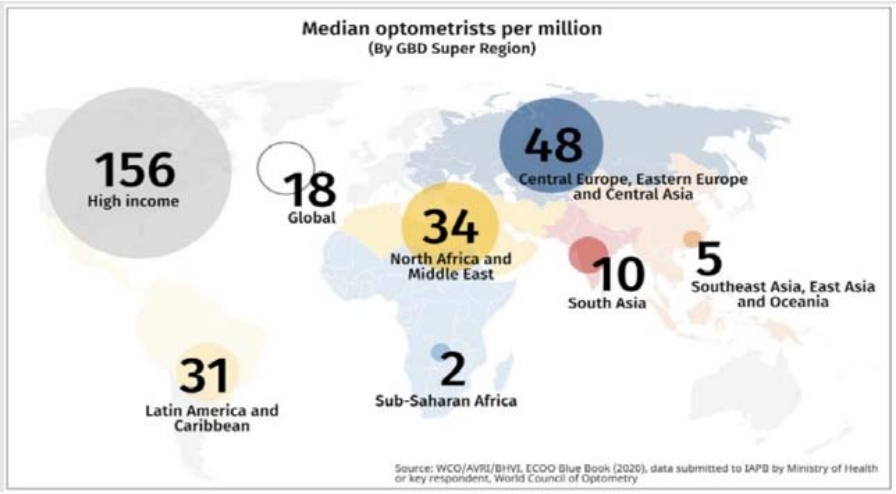

Figure 1: Global optometry workforce, [14].

Table 1: Scheme X Optic benefit limits per benefit options.

	Overall limit per beneficiary	Sub-limit per frame	Yearly limit per family every second year
Benefit Option1	R2 474	R1 978	R4 961
Benefit Option 2	R2 097	R1 223	R4 191

	Scheme Benefit (Paid from Risk)		Additional Optical Savings Benefit (Paid from Positive Savings Only)	
Consultation	100% of the cost for a Composite Consultation to a maximum of R592 of the refraction, a glaucoma screening, visual fields screening and biometrics eye evaluation.		Nil	
Frames	A frame to the maximum value of R1 291.		A frame to the maximum value of R2 474	
Lenses	One pair of either	Single vision lenses to the value of R495 per pair.	One pair of either	Single Vision Lenses to the maximum value of R676 per pair.
		Bifocal lenses to the value of R1 506 per pair.		Bifocal lenses to the maximum value of R1 890 per pair.
		Multifocal lenses to the value of R1 936 per pair.		Multifocal lenses to the maximum value of R2 439 per pair.
Lens Enhancements	Lens enhancements to the value of R861		Lens enhancements to the value of R539	
	OR			
Contact lenses	A benefit to the value of 1,398		A benefit to the value of R1 323	

Figure 2: Funding of optical benefits from risk and savings pools, source.

Table 2: Discovery health optometry benefit plan.

Plan	Benefit Cover
Saver Series Plans	These healthcare services are paid from available funds allocated to the medical Savings Account (MSA) up to 100% of the Discovery Health Rate (DHR).
Smart series - Classic Smart Plan	One eye test per member per year at any Smart Network optometrist with a R55 co-payment for the test. Frames and lenses: Members will have to pay the account because this health plan does not offer additional day- to-day benefits for this healthcare service.
Smart series - Essential Smart Plan	One eye test per member per year at any Smart Network optometrist with a R110 co-payment for the test. Frames and lenses: Members will have to pay the account because this health plan does not offer additional day- to-day benefits for this healthcare service

also contract with preferred or Designated Service Providers (DSPs) to provide members with better rates. Co-payments or penalties apply when members obtain services from non-DSPs [29]. Medical schemes apply different penalties or co-payments for members who seek health services outside the network; the applications of these further differ at the benefit option level. For example, Medihelp's MedElect (Necesse): The in-Network - Frame and Lens Enhancement benefit is up to R 550; this reduces to R 413 for the Out of Network value option. The member is liable for the difference.

Furthermore, members are liable for anything above the set benefit limit. The other example which evident disparities between the Discovery Medical Scheme Saver series and Smart benefit options as depicted in Table 2. Some schemes offer value-added services or n incentives for using a network service provider. These vary per scheme; for example, discovery offers a 20% discount on frames when members use an optometrist in the Optometry Network. This difference and incentives also apply to different benefit options. Bankmed also offers a 20% discount on frames and eyeglass lenses when a member visits an optometrist in the Bankmed Optometry Network. However, this is only available for the Core Saver Plan and Plan. The discount is only applicable to hardware items such as frames, eyeglass lenses and their add-ons but not for contact lenses

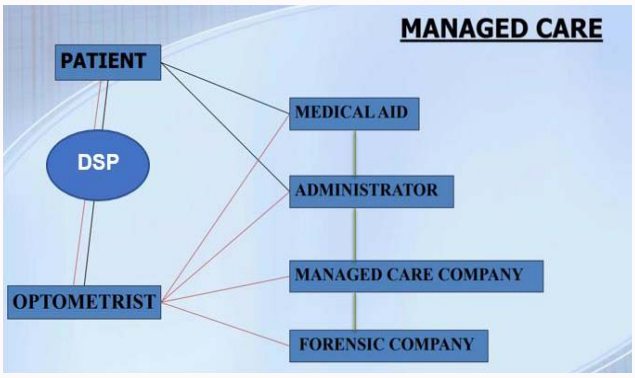

Figure 3: Optometrists managed care model: Adapted and modified from SAOA [21].

and professional services such as consultation and eye examination fees. Figure 3 depicts a managed care model employed by medical schemes to care and manage optic benefits. Included is the role of DPS in the whole value chain.

Most of the optometrist networks and service providers are by KFML; these include.

Table 3: Description of variables of interest.

	Description
Dependent Variable (DV)	Benefits Paid Per Utilising Beneficiary Per Annum
Independent Variables (INDV)	Scheme Type (Open Schemes, Restricted Schemes). The Medical Schemes Act of 1998 defines open schemes like open membership. As a result, they accept anyone who wants to become a member and pay the premium (Medical Schemes Act 131 of 1998). Closed or restricted membership schemes are restricted to an employer or union [35]. (30,000) beneficiaries. A medium scheme has less than thirty thousand (30,000) beneficiaries and more than six thousand (6,000) members (CMS, 2019). A small scheme has fewer than six thousand (6,000) members [23]. Medical schemes outsource all or some of administrative functions to third-party administrators, managed care organisations (MCOs), and brokerage firms in certain circumstances. Self-administered medical schemes conduct administrative functions such as negotiating payment arrangements with healthcare providers, the processing and payment of claims from members, maintaining the call centre, and the marketing and promotion of the services of the scheme in-house [28].

Figure 4: Number of beneficiary's sample vs medical scheme population, 2020.

- Spec-Savers- Leading Optometry Group in South Africa with over 300 stores
- Execuspecs- 50 + stores
- Preferred Provider Negotiators (PPN) Manages optical benefits for 16 medical schemes

PPN is the most prominent optometrists Provider Network in South Arica, with some 2000 members. PPN owns more than 80% (eighty per cent) of the preferred independent provider managed care market [21]. PPN manages optical benefits for 22 (twenty-two) medical schemes representing more than 2 million beneficiaries, accounting for twenty-eight percent.

Out of benefits upgrades

Medical schemes contribute to optic benefits, mainly towards basic lenses and frames [24,25]. These are funded to a specific limit and are also a function of the benefit option. Should members opt for a frame higher than the medical scheme covered, the member will need to pay for the difference; this potential attracts a co-payment for the member.

Objectives

The primary objective of this study was to assess the distribution of optometrists claiming from medical schemes. The study's secondary objective was to conduct multivariate analysis to determine factors that affect optometrist expenditure in medical schemes.

Methods

The study entailed a retrospective comparative analysis of medical schemes' claims data associated with benefits paid for optometry services. The review period was 2016-2020 data sourced the CMS annual report at aggregated scheme level than at benefit option level. The analysis included claims data from 61 medical schemes that had complete expenditure data over the review period. Fifteen were open schemes, and forty-six were closed schemes. Categorical variables were summarised using counts and proportions, and a Chi-square test was being used to compare differences. Continuous variables were depicted as mean, Standard Deviation (SD.), Range (Minimum and Maximum), or percentages. A 2-sided α of less than 0.05 was considered statistically significant for unadjusted comparisons. Categorization of postal codes by province and hub adopted a paper by Lombaard [30].

Test for normality was conducted to assess whether the normal distribution assumptions were met. The sample sizes of this study is 61 medical schemes, and thus lower than 2,000, the Shapiro test was a more appropriate criterion to test for normality. The null hypothesis of a normality test is no significant departure from normality. When the p is more than 0.05, it fails to reject the null hypothesis and thus, the assumption holds. The study employed a generalized Linear Model (GENMODE). Dependent variables and independent variables to be included in the model are depicted in Table 3. STATA ad SAS 9.4 statistical packages were employed to conduct the analysis.

Results

Demographic characteristics

The analyzed schemes accounted for 8.1 million lives of 2020 beneficiaries, accounting for 91% of all beneficiaries over the same period; of these, 1.1 million utilized optometrist benefits, which accounted for 13% of beneficiaries included in the study. The weighted average age of utilizing beneficiaries was 33.6 years, slightly older than the industry average of 33.4 years. Figure 4 shows the distribution of beneficiaries utilizing optometrists services in 2020 relative to the medical scheme population.

Distribution of optometrists and the average amount paid per visit

Table 4 shows the distribution of claiming optometrists, the total number of visits paid in 2019 and the average amount paid per visit. The analysis revealed just over 3,000 claiming optometrists, 3,064. More than a third of optometrists were based in Gauteng province, which accounted for 35%. KwaZulu Natal followed this at 17%. The Western Cape province differed from Mpumalanga at 14% and 13%, respectively.

The Gauteng province accounted for nearly thirty percent of paid visits, followed by the KwaZulu Natal, which accounted for twenty-eight and twenty percent respectively. Western and Eastern Cape accounted for thirteen and twelve percent of visits paid. The average amount paid per visit was services were R412. This was higher

Table 4: Percentage of claiming optometrists by the proportion of utilising beneficiaries per province-2019.

Province	Number of claiming unique optometrists practice Numbers >15 paid visits per annum	% of claiming optometrists per province	Total Visits Paid for	% of paid Visits paid for	Average amount paid per visit per province (R)
Eastern Cape	226	7%	125,503	10%	555
Free State	146	5%	75,478	6%	517
Gauteng	1,085	35%	364,156	29%	336
KwaZulu Natal					
	554	18%	253,295	20%	457
Limpopo	130	4%	60,379	5%	464
Mpumalanga	323	11%	101,485	8%	314
North West	85	3%	32,568	3%	383
Northern					
Cape	52	2%	31,090	2%	598
Western Cape	458	15%	216,666	17%	473
Not Classified	5	-	334	-	-
All	3,064		1,260,954		412

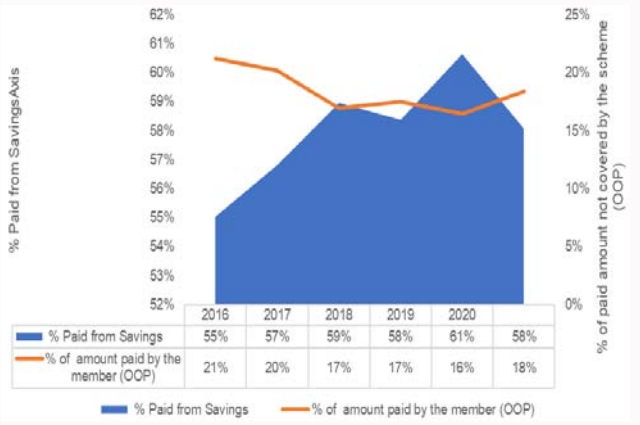

Figure 5: Proportion of Optometry benefits paid from PMSA and the % of incurred by a member.

in the Northern and Eastern Cape provinces, where the average amount was R598 and R555, respectively. Provinces such as Gauteng, Mpumalanga, and Western Cape had an average amount paid lesser than R400. Annexure A depicts the distribution of claiming optometrists. Port Elizabeth region accounts for many optometrists in the Eastern Cape. The Kimberly region accounts for 37 of the 52 claiming optometrist in the Northern Cape, while the Upington region has 15 claiming optometrists.

Funding of Optometry benefits from PMSA and proportion incurred by members-trend

Figure 5 shows the proportion of benefits funded from the Personal Medical Savings Account (PMSA) and the members funded. The figure shows that just under 60% of optometry benefits were funded from the savings account over the review period. Thus the balance was funded from the risk-benefit, 58% of benefits were paid from the PMSA. The levels have increased to 61% compared to 55% paid in 2016. Over the same review period, the member paid just under a fifth (18%) of the paid amount towards optometry benefits. However, the levels of OOP showing a downward trend, decreasing from 21% in 2016 to 16% in 2020.

Scheme type: Sector

Table 5 shows that open schemes mainly funded optometry benefits from the PMSA compared to restricted schemes, 83% *vs.* 27%, respectively. The table also shows higher levels of OOP, nearly twice in open schemes compared to closed schemes, 23% *vs.* 13%.

Table 5: Proportion of optometrists benefits paid from PMSA and the % of incurred by members by sector.

	% Paid from Savings	% of the paid amount not covered by the Scheme (OOP)
Open	83%	23%
Restricted	27%	13%
All	58%	18%

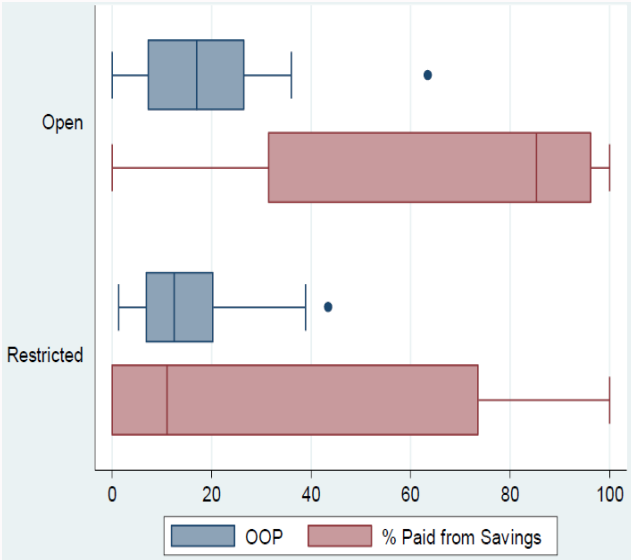

Figure 6: Whisker box plot for benefits paid by scheme type.

Figure 6 further depicts a high level of OOP in open schemes, further depicting an outlier of one scheme that had an OOP as a percent of a claimed amount higher than sixty percent. The figure further shows disparities in how schemes are fund this benefit with open schemes mainly from the savings benefit while closed schemes fund the same benefit from the risk.

Table 6: Proportion of optometrists benefits paid from PMSA and the % of incurred by members by scheme size.

	% Paid from Savings	% of the paid amount not covered by the Scheme (OOP)
Large	60%	19%
Medium	38%	16%
Small	31%	13%
All	58%	18%

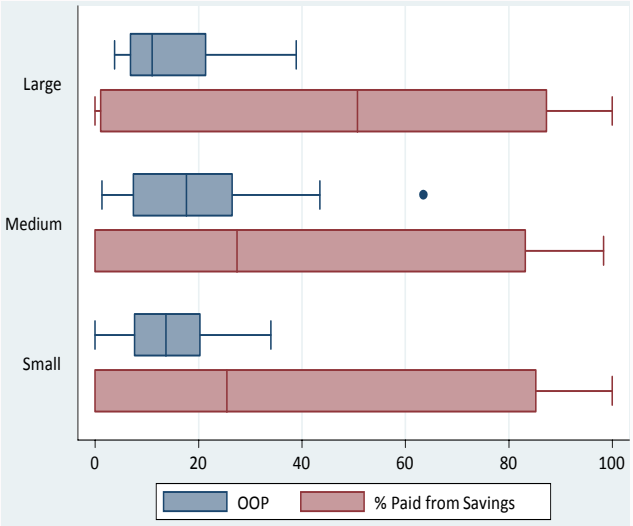

Figure 7: Whisker box plot for benefits paid by scheme size.

Scheme size

Large schemes generally find Optometry benefits from the PMSA compared to medium and small schemes, 60% *vs.* 38% and 31%, respectively. A similar trend was noted when looking at OOP, and large schemes members were subjected to slightly higher OOP than medium and small schemes, 19% *vs.* 16% and 13%, respectively (Table 6).

Figure 7 further depicts the high level of OOP in open schemes, depicting an outlier of one scheme that had an OOP as a percent of a claimed amount higher than sixty percent of what was claimed. Large schemes mainly fund this benefit from the PMSA benefit, while medium and small schemes mainly fund the benefit from the risk pool.

Business operating model factor

Table 7 shows that schemes with an outsourced operating model paid higher benefits from the PMSA than self-administered schemes, 60% *vs.* 31%, respectively. A similar trend was noted when looking at OOP; large schemes members were subjected to slightly higher OOP than medium and small schemes, 19% *vs.* 15%, respectively. The whisker box plot in Figure 8 shows a few outliers in OOP levels experienced by members in the third-party administered schemes.

Benefits paid per utilizing beneficiary

Table 8 shows a descriptive analysis of the average amount paid per utilizing beneficiary. The average expenditure per utilizing beneficiary per annum was higher in closed schemes than open schemes, R2 987 (SD=1,039) and R2 317 (SD=708), respectively. The range of benefits paid was much wider for restricted schemes than open schemes (R1 300-R3896) compared to (R938-R5 532), respectively. This depicts

Table 7: Proportion of optometrists benefits paid from PMSA and the % of incurred by members by business operating model.

	% Paid from Savings	% of the paid amount not covered by the Scheme (OOP)
Insourced	31%	15%
Outsourced	60%	19%
All	58%	18%

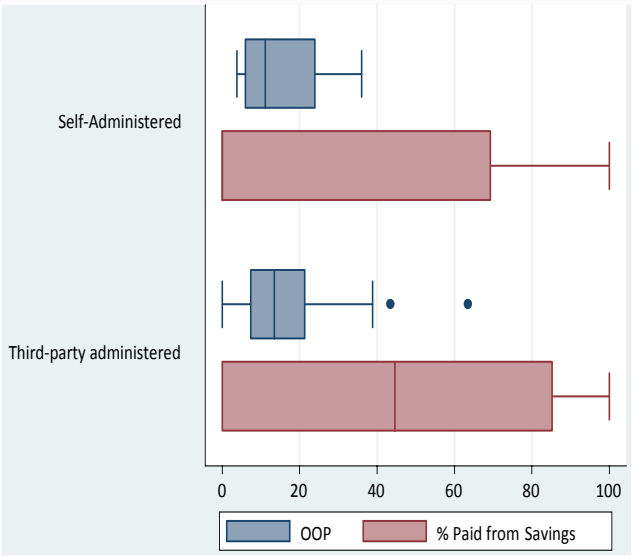

Figure 8: Whisker box plot for benefits paid by operating model.

Table 8: Descriptive analysis of average benefit paid by scheme type, size and operating model.

Type	N	Mean (SD)	Range (Min – Max)
Scheme Type			
Open	15	R2 317 (707.8)	(R1 300 to R3 896)
Restricted	46	R2 987.26 (1 039.1)	(R938 to R5 532)
Scheme size			
Large	22	R2 690.32 (855.3)	(R1 275 to R4 473)
Medium	15	R2 353.27 (868.8)	(R938 to R3 900)
Small	24	R3 236.79 (1 082.3)	(R1 302 to R5 532)
Operating Model			
Self- Administered	12	R2 560.25 (899.1)	(R1 275 to R4 473)
Third-party Administered	49	R2 886.65 (1 028.4)	(R938 to R5 532)

much richer benefits in closed schemes than at the consolidated level. A similar phenomenon was also evident when adjusting for scheme size; small schemes paid a much higher average benefit per annum to optometrists than medium and large schemes. Self-administered schemes had slightly higher benefits paid on average than third-party administered schemes, R2 887 (SD=1,028) and R2 560 (SD=899), respectively.

The goodness of fit tests

Table 9 depicts a model fit for paid optometry services adjusted for utilizing beneficiaries per annum. The Shapiro test was used since the sample size is <2000. The Shapiro test below shows a higher p-value of 0.2796, thus suggesting that the data follows Normal distribution. The

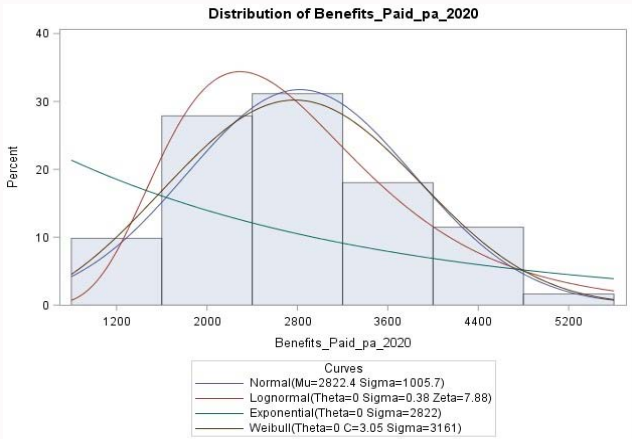

Figure 9: Distribution of benefits paid per utilisation beneficiaries-2020.

Table 9: Tests for normality.

Test	Statistic		P value	
Shapiro-Wilk	W	0.9762	Pr < W	0.2796
Kolmogorov-Smirnov	D	0.11377	Pr > D	0.048
Cramer-von Mises	W-Sq	0.07417	Pr > W-Sq	0.2454
Anderson-Darling	A-Sq	0.44382	Pr > A-Sq	>0.2500

null hypothesis of a normality test is no significant departure from normality. When the *p* is more than 0.05, it fails to reject the null hypothesis, and thus the assumption holds (Figure 9).

Multivariate analysis on the 2020 benefits paid

The Generalized Linear Model employed showed the effect of the sector (p-value =0.0334) and size-small schemes *vs.* large schemes (p-value =0.2373) for small schemes *vs.* medium schemes (p-value =0030). The range of benefits paid was wider in small schemes than large and medium schemes R1 302 to R5 532 compared to R1 275 to R4 4473 *vs.* and R938 to R3 900, respectively. However, the operating model was not statistically significant to benefits paid for optometrist benefit (p-value =0.2377). The co-payment level paid by members was 18%, higher in open schemes *vs.* closed schemes, 23% *vs.* 12%, respectively (Table 10).

Discussion

There are glaring disparities in how optometry services, both public versus private, urban versus rural, are one of the main contributors to limited access to these services. According to Sithole [19], there are no optometrists in the public sector for a province such as Northern Cape, which impacts nearly 1.2 million people who do not have access to these benefits. The unavailability of eye care service providers in the rural areas compared to the urban communities makes access to health care services extremely challenging and, thus, may lead to increased prevalence of vision loss in rural areas [5,31]. This study reviewed literature on practicing optometrists across provinces; the results revealed Limpopo province, though a rural-based province, had a significant number of optometrists in the public sector and accounted for more than half of optometrists in the sector. The Limpopo province also had a high utilization rate of these services. The Health Professions Council of South Africa (HPCSA) 7 cited in Maake & Moodley [15] reported an estimate of 3,697 registered optometrists in South Africa.

The recent data from SAOA [21] reports 3,200 registered optometrists in the country, while the Momentum Ingwe & Ingwe Active Optometry network totals 3,198 [32]. Brien Holden Vision Institute [22] estimates 97% of these practicing in the private sector. Thus, indicating an estimate of 3,104 optometrists registered in the private sector. It is also possible that not all registered optometrists are practicing or claiming from medical schemes. This study estimates 3,064 optometrists claimed from medical schemes in 2019.

According to Maake and Moodley, there are no public health optometrists in the Northern Province [15]. This study found a quantum of optometrists practicing in the private sector in the Northern Cape, and these accounted for three percent of claiming optometrists versus two percent of visits paid. This study also showed a slightly uneven distribution of optometrists in the private sector in the following area, depicting more visits per optometry, thus depicting an urgent need to increase the number of optometrists' networks and contracting in these areas to improve access.

- East London
- Beaufort West
- Pietermaritzburg
- Port Shepstone
- Worcester
- Kimberly
- Umtata

The average amount paid per optometry visit per province ranged between R314- R598. Thus, were much higher in underserved areas

Table 10: Multivariate analysis of Optometry benefits by size, sector and operating model: GENMODE- Analysis of Maximum Likelihood Parameter Estimates.

Parameter		DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi- Square	P-values
					Lower confidence level	Upper confidence level		
Intercept		1	3368.36	190.44	2995.11	3741.6	312.84	<.0001
Operating model type	**Self- Administered**	1	-348.84	295.42	-927.87	230.18	1.39	0.2377
	Third-party administered	Ref						
Scheme type	**Open**	1	-587.42	276.18	-1128.72	-46.12	4.52	0.0334
	Restricted	Ref						
Scheme size	**Large**	1	-326.74	276.47	-868.6	215.13	1.4	0.2373
	Medium	1	-874.35	294.36	-1451.29	-297.41	8.82	0.003
	Small	Ref						
Scale		1	887.31	80.33	743.035	1059.6		

depicted above, further indicating a higher demand for these services. Multivariate analysis showed the effect of size and scheme type on the average expenditure on optometrists. Willie [33] and Trish & Herring [34] attest to the effect of size and market power on expenditure. Higher levels of insurer market concentration may yield more substantial insurer bargaining leverage with local providers, thereby enabling them to negotiate lower provider prices [34]. Higher co-payment levels are open with the CMS annual reports [35].

Disparities in the funding model between open and restricted schemes are worrying. Open schemes, on average, offer twice the number of benefit options [35,36]. Larger risks pools in open schemes could drive these compared to restricted schemes.

Conclusion

The analysis showed that the distribution of claiming optometrists was relative to the distribution of members. However, there is a need to recruit more optometrists for rural-based provinces such as the Eastern Cape Province. The study found nearly 3,000 claiming providers in the private sector; this figure combined with those reported in the public sector indicate a much higher estimate of practicing optometrists reported elsewhere. A higher proportion of public optometrists in the rural-based provinces such as Limpopo, which accounts for more than half of optometrists practicing in the sector, indicate higher access relative in rural provinces relative to urban provinces Gauteng and Western Cape. The study recommends that partnership between the Limpopo province and neighboring provinces that are undeserved with optometrist's increased capacity. There is also an urgent need to redeploy some public health sector optometrists in Limpopo to provinces such as the Northern Cape. This study found disparities in the average amount paid for optometry visits across provinces. The average amount paid was R412 per visit; however, Eastern Cape and Northern Cape provinces reported higher figures, particularly the East London region. Port Shepstone in KwaZulu Natal reported more than twice the average amount paid. These geographic region disparities indicate potential resource constraints and that the observed higher benefits paid could be associated with higher demands in these underserved areas. The study recommends recruiting more optometrists in the following regions to ensure adequate access:

- East London
- Beaufort West
- Port Shepstone
- Worcester
- Kimberly
- Umtata

Open scheme members were subjected to higher co-payment levels than closed schemes, thus depicting better funding of these benefits. The study recommends adequate funding of benefits. Medical schemes ensure that day-to-day benefits such as optometry benefits are funded from correct risk pool to prevent members from running out of benefits in the long term. Medical schemes should further consider educating members on not using a DSP and possible options to avoid co-payment. Medical schemes should also ensure adequate access to DSPs to minimize co-payment levels. The study also revealed the size factor as one of the deterministic factors of optometry benefits, where small schemes paid higher benefits than medium and large schemes. Small schemes should consider tariff initiatives that will save costs for members in the long run. In the absence of the supply-side regulator, the study recommends that medical schemes establish a tariff bargaining platform where all schemes could benefit from reduced tariffs in members' interest irrespective of size. The Competition Commission recommended an administrator Collective Negotiations on Behalf of Medical Schemes [29]. Higher co-payments, particularly in open schemes, need further investigation to understand the main drivers. The study recommends the capping of co-payments in the industry. Lastly, the study recommends an urgent review of the funding model of optic benefits by closed schemes.

Limitations

This was a quantitative retrospective study of secondary data submitted to the CMS. The data does not distinguish between services such as an eye examination and the expenditure associated with glasses and frames or contact lenses. The analysis mainly covered aggregated data at the scheme level; benefit option information could provide better insights as far as benefit richness is concerned at the option level. Primary data collected from medical service providers and members could provide better insights on other drivers of optic benefit expenditure. Lastly, trend analysis data did not adjust for demographic characteristics, technology, medical inflation, and tariffs. The multivariate analysis considered the broad administration function. Specific components of managed care, such as optometry networks, should be considered in future studies.

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