

DISSERTATION
BOSTON IVY HEALTHCARE
SOLUTIONS PVT.
LTD(MEDIKABAZAAR)

GUIDED BY:

Dr. Sameer Phadnis

Presented By:

Ms. Sushweta Guha Dey

DISSERTATION TITLE

A STUDY TO ANALYSE THE NEED ASSESMENT OF
SCANNING LASER POLARIMETRY FOR GLAUCOMA
PREVENTION AND MANAGEMENT AND ITS
MARKETING NEED THROUGH E-COMMERCE IN THE
MEDICAL DEVICE INDUSTRY OF INDIA

RESEARCH QUESTION

What is the importance of SLP ?

What is the significance of SLP in case of early detection of Glaucoma ?

What is the market need of SLP in the Medical Device Industry ?

RATIONALE

Global number of people affected with glaucoma will increase by 74% from 2013 to 2040 disproportionately causing bilateral blindness among those residing in Asia and Africa.

Vision loss due to glaucoma has a significant impact on HRQoL even in the early stages of this disease

SLP is exceptionally helpful for early detection of structural damage to RNFL and to a great extent useful for Longitudinal follow-up for detecting progression.

OBJECTIVES:

- To map the importance of Scanning Laser Polarimetry
- To determine its significance in early detection of Glaucoma
- To develop the market need of Scanning Laser Polarimetry through e-commerce in Indian Medical Device Industry

LITERATURE REVIEW

- Technological principles and the role of SLP in the diagnosis and monitoring of glaucomatous optic neuropathy, in the light of that scientific evidence are relevant
- Study suggests that the RNFL thickness measured by OCT and GDx VCC was correlated in a good manner in both Early glaucomatous eyes and Healthy Eyes but poorly correlated in Ocular Hypertensive(OH) and Glaucoma Suspect(GS) eyes. Further they stated that when managing the case with OH or GS eye, one should be cautious in interpreting different imaging data.
- The GDx-GPA was able to detect glaucoma progression in a noteworthy number of cases showing progression by conventional methods, with a very high specificity and high positive likelihood ratios. Estimates of the accuracy for detecting progression propose that the GDx-GPA could be used to adjunct clinical evaluation in the detection of longitudinal change in glaucoma.
- In case of Suspicious optic discs with normal visual fields majority indicates or rather orders for optic disc or RNFL imaging

STUDY DESIGN

Systematic Review and Meta -Analysis of Secondary data based on relevant data sources eg: Pubmed, Google Scholar for population-based studies of glaucoma prevalence, diagnostic modalities of glaucoma, on SLP, its marketing need, and quality life of Glaucoma patients published up to 2017

- The steps followed in this Systematic Review are

- **STEP 1: FRAMING THE QUESTION**



- **STEP 2: IDENTIFYING RELEVANT PUBLICATIONS**



- **STEP 3: ASSESSING STUDY QUALITY**



- **STEP 4: SUMMARIZING THE EVIDENCE**



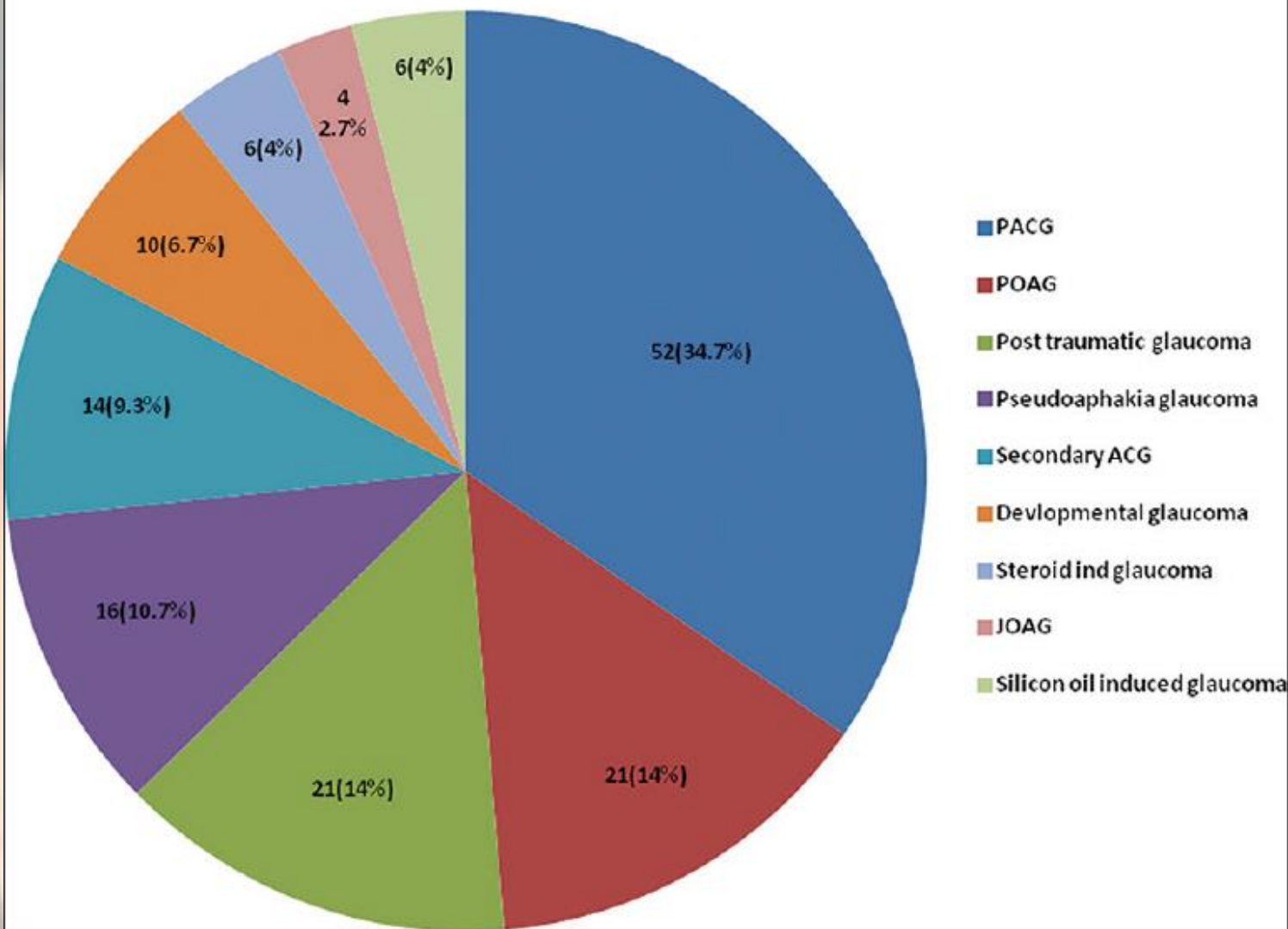
- **STEP 5: INTERPRETING THE FINDINGS**



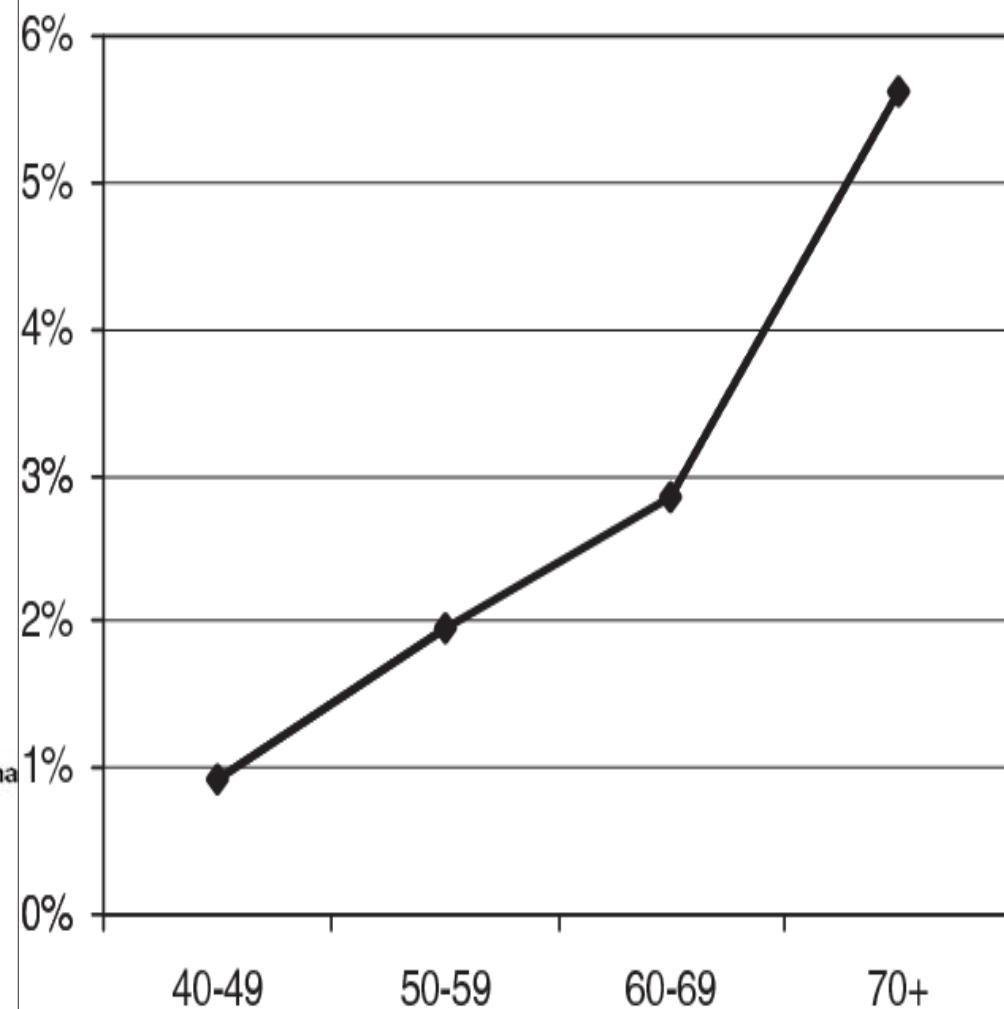
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DISCUSSION OF FINDINGS

TYPES OF GLAUCOMA



Age and POAG prevalence



• TABLE SHOWING RECENT GLOBAL PREVALANCE OF GLAUCOMA

Table 2. Pooled Prevalence (%) and Number of People (Aged 40–80 Years, in Millions) with Primary Open-Angle Glaucoma, Primary Angle-Closure Glaucoma, and Glaucoma in 2013

World Region	POAG		PACG		Glaucoma (POAG and PACG Combined)	
	<i>Prevalence</i>	<i>Number</i>	<i>Prevalence</i>	<i>Number</i>	<i>Prevalence</i>	<i>Number</i>
Asia	2.31 (1.44–3.44)	23.54 (18.32–29.73)	1.09 (0.43–2.32)	15.47 (6.26–32.41)	3.40 (2.26–5.02)	39.00 (27.78–55.80)
Africa	4.20 (2.08–7.35)	7.03 (4.25–10.60)	0.60 (0.16–1.48)	1.26 (0.34–3.30)	4.79 (2.63–8.03)	8.29 (5.16–12.30)
Europe	2.51 (1.54–3.89)	5.36 (3.99–7.11)	0.42 (0.13–0.98)	1.41 (0.43–3.37)	2.93 (1.85–4.40)	6.77 (4.94–9.24)
North America	3.29 (1.83–5.53)	2.97 (1.96–4.29)	0.26 (0.03–0.96)	0.39 (0.04–1.38)	3.55 (1.98–5.81)	3.36 (2.21–4.94)
Latin America and the Caribbean	3.65 (1.90–6.54)	5.01 (2.70–8.88)	0.85 (0.14–3.00)	1.59 (0.31–5.24)	4.51 (2.44–7.90)	6.59 (3.61–11.95)
Oceania	2.63 (1.16–4.83)	0.20 (0.10–0.33)	0.35 (0.05–1.15)	0.05 (0.01–0.16)	2.97 (1.38–5.23)	0.25 (0.13–0.42)
Worldwide	3.05 (1.69–5.27)	44.11 (31.32–60.94)	0.50 (0.11–1.36)	20.17 (7.39–45.86)	3.54 (2.09–5.82)	64.26 (43.83–94.65)

Data in parentheses are 95% Crls.

PACG = primary angle-closure glaucoma; POAG = primary open-angle glaucoma.

Number of people (aged 40–80 years) in 2013 was estimated on the basis of World Population Prospects: The 2012 Revision from Department of Economic and Social Affairs, United Nations. Worldwide population number (aged 40–80 years) in 2013 was 2.33 billion.

• TABLE SHOWING PROJECTION OF GLOBAL PREVALANCE OF GLAUCOMA

Table 5. Projection of the Number of People (Aged 40–80 Years, in Millions) with Primary Open-Angle Glaucoma, Primary Angle-Closure Glaucoma, and Glaucoma in 2020 and 2040

World Region	POAG		PACG		Glaucoma (POAG and PACG Combined)	
	2020	2040	2020	2040	2020	2040
Asia	28.29 (21.99–35.75)	42.32 (33.03–53.34)	17.96 (7.27–37.63)	24.50 (9.93–51.35)	46.24 (33.08–65.91)	66.83 (48.39–93.77)
Africa	8.73 (5.28–13.17)	16.26 (9.86–24.59)	1.57 (0.42–4.10)	2.88 (0.77–7.51)	10.31 (6.41–15.28)	19.14 (11.89–28.30)
Europe	5.67 (4.21–7.51)	6.39 (4.79–8.42)	1.46 (0.45–3.49)	1.46 (0.45–3.50)	7.12 (5.20–9.68)	7.85 (5.76–10.55)
North America	3.52 (2.31–5.08)	4.24 (2.80–6.10)	0.42 (0.05–1.48)	0.47 (0.05–1.65)	3.94 (2.61–5.72)	4.72 (3.13–6.75)
Latin America and the Caribbean	6.22 (3.36–11.01)	10.20 (5.52–17.97)	1.89 (0.37–6.23)	2.66 (0.52–8.78)	8.11 (4.46–14.62)	12.86 (7.12–22.85)
Oceania	0.25 (0.12–0.40)	0.35 (0.18–0.58)	0.06 (0.01–0.19)	0.07 (0.01–0.24)	0.30 (0.16–0.50)	0.42 (0.22–0.69)
Worldwide	52.68 (37.27–72.92)	79.76 (56.18–111.0)	23.36 (8.57–53.12)	32.04 (11.73–73.03)	76.02 (51.92–111.7)	111.82 (76.50–162.9)

PACG = primary angle-closure glaucoma; POAG = primary open-angle glaucoma.

Number of people (aged 40–80 years) in 2013 was estimated on the basis of World Population Prospects: The 2012 Revision from Department of Economic and Social Affairs, United Nations. Worldwide population numbers (aged 40–80 years) are 2.33 billion for 2013, 2.67 billion for 2020, and 3.61 billion for 2040.

SUMMARY OF STUDIES ON GLAUCOMA BURDEN OF INDIA & ASIA

- **Ninety-five percent of the subjects of the urban population and 98% of the rural population were absolutely unaware of the fact of suffering from glaucoma**
- **POAG is the most predominant form of glaucoma, followed by PACG wherein NTG and exfoliative glaucoma are relatively rare**
- **Factors associated for Glaucoma prevalence were depicted as older age, lower body mass index, lower blood concentration of hemoglobin, lower level of education, higher intraocular pressure, disc hemorrhage, myopic retinopathy, and longer axial length.**
- **Increasing age, Male gender, Myopia of more than one Dioptre, and Pseudoexfoliation are the most important associated factors of POAG.**

SUMMARY OF STUDIES ON QUALITY OF LIFE AND ECONOMIC BURDEN OF GLAUCOMA PATIENTS

- Higher severity of VFL among OAG impacts vision related QOL.
- Vision loss due to glaucoma has a significant impact on HRQoL even in the early stages of this disease.
- Vision loss due to glaucoma has a significant impact on HRQoL even in the early stages of this disease.

SUMMARY OF STUDIES ON CURRENT DIAGNOSTIC MODALITIES OF GLAUCOMA

- Greater number of subspecialists were inclined toward retinal imaging for patients with glaucoma
- GDx ECC offers better diagnostic accuracy compared with that of VCC .

SUMMARY OF STUDIES ON EFFICACY & UTILITY OF SCANNING LASER POLARIMETRY

- In resource-abundant areas, the wider spectrum of glaucoma is addressed where there is emphasis on early detection of structural changes of Nerve Fibre Layer
- SLP RNFL measurements Were absolutely independently predictive of future visual loss even When the age, IOP, CCT, vertical CDR, and SAP were there in the model.
- NFL analysis targeting specific pattern of loss is extremely beneficial for differentiating normal NFL patterns from diseased NFL patterns.
- GDX can well differentiate between Normal, OH and NTG subjects.

Conclusions

DRAWN



- **Global number of people affected with glaucoma will increase by 74% from 2013 to 2040 disproportionately affecting people residing in Asia and Africa.**
- **Higher PACG risk in Individuals who are residing in East Asia, and higher POAG risk are among urban when compared with rural habitations.**
- **With increased urbanisation in Asia which are being projected for the future, glaucoma prevalence could continue increase in definite proportion, particularly in countries where there are higher rates of urbanisation, for example, China and India**
- **GDx-VCC has emerged in the Recent Clinical field as a valuable, objective tool of clinical value for the management of glaucoma**
- **GDx-ECC has even overcome the presence of ARPs and improved the diagnostic accuracy and the relationship between functional and structural measurements in glaucoma patients and is capable of neutralizing any residual anterior segment birefringence which are completely not compensated by VCC.**

- Its exceptionally helpful for early detection of structural damage to RNFL and to a great extent useful for Longitudinal follow-up for detecting progression.
- GDx test report should be judiciously used by the clinicians in conjunction with clinical evaluation of the optic nerve head and functional testing for starting or adjusting glaucoma therapy
- The best-performing parameter is the NFI in GDx-VCC
- GDX is easy to operate, which does not require any pupillary dilatation, simultaneously it is highly reproducible, does not employ a reference plane, even does not require correction for ocular magnification and incorporates an easy age-matched normative database.

- **Scanning laser polarimetry's major contribution lies in providing RNFL thickness information, which is an important indicator of early glaucoma.**
- **The FDA, glaucoma experts, researchers and clinicians described OCT, stereophotography, SLP, and CSLO for identifying clinically significant structural change which are related to glaucoma progression and treatment that is greater than that expected from normal aging and is associated with future visual function changes in the Medical Device industry.**
- **At every levels structural imaging technologies provide clinicians ,the ability to assess the ONH and RNFL in a standardized, objective and quantitative fashion like the level of an expert observer**
- **Evaluation of progression is most mature functionally as measured by SAP and structurally as assessed by CSLO.**

Thank You

