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Dr Matthew Pizzuto, Dr Matthew Formosa, Dr Marilyn Harney and Dr Gabriel Ellul, authors of the study 'An analysis of mental health referrals from public health centres to the Emergency Department of Mater Dei Hospital, Malta' published in the JMCFD (Volume 10 Issue 01 December 2021), hereby confirm that processing of personal data during the study method was conducted using anonymised data and that, after the study was concluded, the data was immediately destroyed and deleted permanently.

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Facilitating health promotion and disease prevention in Maltese family practice

Dr Mario R SAMMUT

The European Definition of General Practice / Family Medicine does not just define the characteristics of the speciality, but also describes the core competences of family medicine (WONCA Europe, 2023). One characteristic is the promotion of health and wellbeing of patients, which, as specified by one of the core competences, is achieved by applying health promotion and disease prevention strategies appropriately (WONCA Europe, 2023).

The December 2024 issue of the JMCFD – Journal of the Malta College of Family Doctors – includes no less than four (out of five) articles regarding this important role of family doctors in Malta. The first by Attard et al. (2024) compares the knowledge, attitudes, skills and habits regarding health promotion and disease prevention of Maltese family doctors / general practitioners (GPs) to results from two previous studies (Sammut, 2006; Pace, Sammut and Gauci, 2014). Although less difficulty in carrying out disease prevention and health promotion activities was reported by family doctors, the main problem remained a lack of time due to a heavy workload (Sammut, 2006; Pace, Sammut and Gauci, 2014; Attard et al., 2024).

Two other articles are related to vaccination. One survey assessed COVID-19 vaccination hesitancy amongst COVID-19-positive Maltese patients: nearly one-fifth of participants were unvaccinated or partially vaccinated, with the

main reported barriers to vaccine uptake being confidence attitudes and structural/psychological constraints (Pullicino et al., 2024). The other study investigated pneumococcal vaccination in a Maltese community home for the elderly, finding that vaccine awareness and uptake were very low with just 12.3% of residents having heard about the vaccine and only 7.7% having taken it (Farrugia, Mifsud and Zammit, 2024).

The fourth article falls under quaternary prevention, which “is an evidence-based concept aiming to protect patients from medical harm of overmedicalisation” (WONCA Europe, 2023). This study tackled polypharmacy in the elderly by evaluating the use of the Deprescribing Guideline on Anticholinergic Drugs in a long-term care facility in Malta and “indicated room for improvement in implementing deprescribing strategies” (Montebello et al., 2024).

Recommendations proposed by the four articles towards improving the health promotion and disease prevention practices of local family doctors include the following:

- Health promotion training for adequate numbers of GPs would be put to good use through running health promotion clinics with yearly health checks for patients. Promoting health in family practice would benefit from brief intervention flowcharts integrated into electronic patient records, better availability

of health promotion and messages and materials, together with improved awareness of health promotion services provided by the Health Promotion and Disease Prevention Directorate (Attard et al. 2024).

- Vaccination histories of patients should be taken and documented by family doctors during the consultation, while promoting the availability, efficacy and safety of vaccination to patients and tackling the underlying reasons for vaccine hesitancy. GPs should also liaise with researchers, policy makers and educators to tackle vaccine hesitancy through appropriate strategies and campaigns (Farrugia, Mifsud and Zammit, 2024; Pullicino et al., 2024).
- Deprescribing of polypharmacy should be implemented carefully and routinely, while monitoring for interactions and side effects, and accompanied by clear documentation of reasons for changes in medication. Alternative forms of treatment should be provided where available, and the availability on the national formulary of medications with less side effects would be beneficial (Montebello et al., 2024).

A survey of nearly 8000 primary care patients in 22 European countries carried out in 2008-9 revealed that many do not feel they need to change unhealthy habits (especially risky drinking), while about half declared that their GPs did not discuss healthy lifestyles with them (Brotans et al., 2012). These views of patients should inform and challenge family doctors to provide continuing and tailored initiatives for successful health promotion and disease prevention outcomes in primary health care.

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A follow up study on the knowledge, attitudes, skills and habits of Maltese family doctors in disease prevention and health promotion

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ABSTRACT

Background

Family doctors occupy a unique position to advocate for health promotion and disease prevention.

Objective

This study aims to evaluate the knowledge, attitudes, skills and habits of family doctors in Malta regarding health promotion and disease prevention and compare the results to similar studies carried out in 2000 and 2011.

Method

A validated questionnaire was distributed to all family doctors and general practitioner (GP) trainees in Malta. Structured interviews were conducted to further explore the results and formulate recommendations. Ethical permission was obtained for the study.

Results

The response rate stood at 9.8% (49/501). Respondents showed disparities between belief and action for clinical examinations, investigations or advice for two clinical scenarios echoing findings from earlier studies. Around 28.5% of respondents faced challenges in delivering health promotion and disease prevention interventions, with the main barrier quoted being a heavy workload and a lack of time (85.6%). Most respondents considered themselves minimally effective at promoting tobacco reduction (53.1%), minimally effective (49.0%) or ineffective (2%) at promoting alcohol reduction (51.0%), either reasonably (57.1%) or very effective (2%) at promoting weight loss (59.1%), and reasonably effective at promoting regular exercise (61.2%). Variances between respondents in private practice and those in public centres regarding the perceived effectiveness of these interventions were noted. Recommendations include restructuring the primary care service to introduce specialised

clinics for health promotion activities, further training, capitalising on digital solutions and dissemination of information.

Conclusions

The study highlighted the key barriers encountered in implementing disease prevention and health promotion interventions. Several actions that can enhance the practices of family doctors were proposed by respondents.

Key words

Attitude; disease prevention, primary; health promotion; knowledge; physicians, family.

INTRODUCTION

Noncommunicable diseases (NCDs) are the leading cause of morbidity and premature mortality worldwide, contributing to 74% of deaths. Behavioural risk factors have been implicated in the aetiology of most noncommunicable diseases, with unhealthy nutritional habits, lack of physical activity, increasingly sedentary lifestyles and harmful use of alcohol and tobacco increasing the risk (World Health Organization, 2023).

The situation in Malta follows the trends observed globally, with 90% of deaths attributable to NCDs and with behavioural risk factors implicated in over one third of deaths (OECD/European Observatory on Health Systems and Policies, 2023). Concerning statistics about the prevalence of behavioural risk factors in the Maltese population show that over 85% of adults aged 15 years and over consume less than the recommended five portions of fruit and vegetables per day (Eurostat, 2019a), 71.6% do not carry out any health-enhancing aerobic physical activity (Eurostat, 2019b), around 25% of respondents over 15 years smoke (World Health Organization, Regional Office for Europe, 2022a), while 15.5% binge drink at least once a month (Eurostat, 2019c). Additionally, Malta has some of the highest prevalence of overweight and obesity in adults and children (OECD/European Observatory on Health Systems and Policies, 2023).

Health promoting and diseases prevention strategies are the most cost-effective methods to address the rising epidemic of noncommunicable diseases, providing an opportunity to implement actions targeting several risk factors. Primary healthcare, and in particular family doctors, are well placed to deliver health promoting and disease prevention interventions to those most at risk and the most vulnerable, particularly given the accessibility potential of primary care in providing essential public health functions to the population (World Health Organization, 1978). Despite this potential, several factors impact the effectiveness and delivery of these interventions (Levine, 1987; Pace, Sammut and Gauci, 2014).

This study aims to evaluate the knowledge, attitudes, skills and habits of family doctors regarding disease prevention and health promotion, and investigate the barriers encountered in implementing health promotion interventions. The objective of this study is to propose actions that can enhance the practices of family doctors, both in the private and public sectors. The results will be assessed against similar studies carried out in 2000 and 2011 to determine whether there was any improvement in the knowledge, attitude, skills and habits of Maltese family doctors in implementing disease prevention and health promotion actions within their practices (Brotons et al., 2005; Pace, Sammut and Gauci, 2014).

METHOD

The modified version of the validated EUROPREV questionnaire that was used for the 2011 study (Pace, Sammut and Gauci, 2014) was amended and face-validated by two family doctors. The main difference between the amended version and the modified version of the original questionnaire was additional questions that emanated from the recommendations of the 2011 study. It was distributed via an online form during 2023 to 501 potential participants. These included 429 out of the 442 family medicine specialists listed in the Maltese Medical and Dental Specialists Register, and 72 General Practitioner (GP) trainees enrolled in the Specialist Training Programme in Family Medicine at the time of

the study. Thirteen family doctors could not be contacted. The questionnaire was distributed via post to 12 family doctors and emailed to the rest of the participants.

Identifying information about the participants was not collected to ensure anonymity and confidentiality, and aggregate data about demographic and professional information was used where possible to avoid identification. To assess knowledge, participants were presented with two clinical scenarios involving a 52-year-old male with a trivial cough and a 57-year-old female with a trivial dermatological issue. Both patients were new to the doctor, had no previous check-ups or tests, no known risk factors, and no personal or family history of major diseases. Other questions covered barriers encountered in implementing preventive approaches, availability of health promotional material, and interest in further health promotion training.

A reminder was sent via email and through the two professional associations, the Malta College of Family Doctors and the Association of Private Family Doctors, after 10 weeks to improve the response rate. The collected data was analysed using the Statistical Package for the Social Sciences (SPSS version 22) software. To determine the statistical significance, *p*-values were computed utilising the Exact Test for a 2xK table.

Structured interviews with 5 participants from the organisations representing family doctors (Malta College of Family Doctors *n*=1), GP trainers (*n*=1) and trainees (*n*=1), and healthcare professionals within the Health Promotion and Disease Prevention (HPDP) Directorate (*n*=2) were carried out online to elicit information on how to improve the response rate, identify the possible reasons for the discrepancies in the clinical scenarios, how to improve health promotion and disease prevention interventions, and how to make health promotion materials more widely available. The interviews were recorded, and thematic analysis was carried out to extract themes and issue recommendations from the outcomes. Ethical approval for the study was obtained from the Health Ethics Committee (Ref. HEC01.23).

RESULTS

The study achieved a response rate of 9.8% (49 participants out of 501 invitees), with females making up 51% of respondents. Table 1 provides an overview of the characteristics of the respondents detailing their work and teaching activities.

Table 1: Professional characteristics (working and teaching activities) compared to respondents in previous studies

Working and teaching activities	Percentage (this study)	Percentage (2011 study)	Percentage (2000 study)
Primary health centre	46.9%	40.7%	16%
Solo practice	53.1%	53.8%	58%
Public centre	42.9%	30.8%	19%
Private centre	57.1%	53.8%	55%
Postgraduate teaching activities	57.1%	41.8%	26%

Assessment of the doctors' knowledge on health promotion and disease prevention was carried out by analysing the responses for Case 1 and Case 2 clinical scenarios in Tables 2 and 3. The results obtained were compared to the responses obtained in the previous studies (Sammut, 2006; Pace, Sammut and Gauci, 2014).

Table 2: Examinations carried out, investigations ordered and advice given by respondents for the clinical scenario of a 52-year-old male presenting with a trivial cough (Case 1)

Exam / investigation / advice	This study		2011 study		2000 study	
	Should it be done? Yes %	Do I do it? Yes %	Should it be done? Yes %	Do I do it? Yes %	Should it be done? Yes %	Do I do it? Yes %
Blood pressure	93.9	93.9	98.9	97.4	99.0	88.0
Glucose level	83.7	89.8	94.0	88.3	80.0	80.0
Cholesterol level	83.7	83.7	93.1	93.0	73.0	74.0
Faecal immunochemical test	38.8	26.5	95.8	50.0	23.0	21.0
Chest X ray	18.4	40.8	91.7	68.8	52.0	44.0
Digital rectal exam	22.4	36.7	93.9	73.0	43.0	45.0
Advise to quit smoking	95.9	98.0	98.9	87.8	99.0	66.0
Advise less alcohol	93.9	93.9	98.8	87.5	97.0	62.0
Advise exercise	98.0	91.8	98.9	89.2	97.0	62.0
Advise weight loss	95.9	87.7	98.9	90.5	97.0	61.0
Body mass index (BMI) estimation	87.8	77.6	98.6	84.6	58.0	39.0

Table 3: Examinations carried out, investigations ordered and advice given by respondents for the clinical scenario of a 57-year-old female presenting with a trivial dermatological problem (Case 2)

Exam / investigation / advice	This study		2011 study		2000 study	
	Should it be done? Yes %	Do I do it? Yes %	Should it be done? Yes %	Should it be done? Yes %	Do I do it? Yes %	Should it be done? Yes %
Blood pressure	89.8	93.9	97.4	89.3	95.0	81.0
Glucose level	85.7	87.8	96.9	86.9	88.0	78.0
Cholesterol level	81.6	85.7	96.3	82.1	76.0	75.0
Faecal immunochemical test	40.8	24.5	90.9	56.5	22.0	20.0
Cervical cytology	63.3	42.9	94.4	81.0	77.0	64.0
Breast examination	57.1	63.3	97.0	87.5	88.0	73.0
Advise to quit smoking	95.9	95.9	95.2	89.5	95.0	61.0
Advise less alcohol	95.9	93.9	97.4	86.5	95.0	60.0
Advise exercise	93.9	91.8	97.6	87.0	95.0	59.0
Advise weight loss	98.0	91.8	96.4	86.8	95.0	60.0
Body mass index (BMI) estimation	85.7	83.7	95.7	82.8	59.0	37.0

Table 4 presents the assessment of the respondents' attitudes towards disease prevention and health promotion activities. Nearly half (42.9%) of respondents did not report any difficulty in promoting disease prevention and health promoting activities; however a quarter reported either some difficulty (26.5%) or little difficulty (28.6%) in this area.

Table 4: Self-reported difficulty to carry out prevention and health promotion activities.

	This study		2011 study	2000 study
	N	%	%	%
Not difficult	21	42.9	41.8	20.7
Very little difficulty	14	28.6	20.9	30.3
Some difficulty	13	26.5	36.3	44.5
Very difficult	1	2.0	1.1	4.5
Total	49			

The primary barrier identified by respondents was a heavy workload and a lack of time (85.6%), while other barriers included insufficient personal training (20.4%), the belief that patients doubted the effectiveness of prevention measures (18.4%), lack of consensus and discrepancies in recommended health promotion and disease prevention actions (14.3%), and a lack of clarity on who is responsible for carrying out these activities in the primary care setting (12.2%).

Table 5 presents the respondents' beliefs on how effective they are in promoting tobacco cessation, alcohol reduction, weight management and regular exercise.

Table 5: Self-reported effectiveness at helping patients reduce tobacco use, reduce alcohol consumption, achieve or maintain normal weight and practice regular physical exercise.

	How effective do you feel you are in helping patients...							
	reduce tobacco use?		reduce alcohol consumption?		achieve or maintain normal weight?		practice regular physical exercise?	
	N	%	N	%	N	%	N	%
Ineffective	0	0.0	1	2.0	1	2.0	0	0.0
Minimally effective	26	53.1	24	49.0	19	38.8	17	34.7
Reasonably effective	22	44.9	22	44.9	28	57.1	30	61.2
Very effective	1	2.0	2	4.1	1	2.0	2	4.1
Total	49		49		49		49	

Assessment of the respondents' access to health promotion materials and training revealed that 41.7% and 30.6% lacked easy access to health promotion material in digital and hard copy formats respectively, while 35.4% of respondents never received training in health behaviour counselling, and 76.6% of respondents never heard of integrated brief interventions for NCD risk factors in primary care. Respondents reported markedly variable interest in receiving training, with 75.5% of respondents interested in brief interventions on healthy eating, 72.9% of respondents interested in the European Physical Activity on Prescription (EUPAP), and 37.5% of respondents interested in brief interventions for tobacco cessation. In the previous 12 months, 20.8% of respondents never referred patients to the weight management service, 31.3% of respondents never referred patients to the smoking cessation clinic, 72.3% of respondents never referred patients to the lifestyle clinic, 62.5% of respondents never referred patients to the chronic disease management clinic, and 59.2% of respondents never referred patients to the chronic kidney disease prevention clinic. Cross-tabulations for Cases 1 and 2, for almost all variables, revealed statistically significant differences between the belief that certain activities should be carried out and the actual implementation of these activities by respondents ($p < 0.05$). The only exceptions were advising against sedentary behaviour ($p=0.082$) for Case 1 and advising against tobacco use ($p=0.81$) and promoting weight loss ($p=0.083$) for Case 2.

When asked how difficult is it (for you) to carry out prevention and health promotion activities, there were no statistically significant differences between respondents engaged in post-graduate teaching activities and those who were not ($p=1.000$). Similarly, there were no statistically significant differences in self-effectiveness for promoting tobacco cessation ($p=0.620$), reduction in alcohol consumption ($p=0.322$), weight loss ($p=0.801$), and regular physical activity ($p=0.665$). When comparing doctors working in public centres with doctors in private practice, there were no statistically significant differences in how difficult is it (for you) to carry

out prevention and health promotion activities ($p=1.000$). However, respondents in private practice were statistically significantly more likely to feel effective at promoting tobacco cessation ($p=0.001$), reduction in alcohol consumption ($p=0.002$), weight loss ($p=0.044$), and regular physical activity ($p=0.004$) to their patients.

Respondents working in public centres were more likely to be interested in receiving training on brief interventions for healthy eating ($p=0.035$) and the EUPAP ($p=0.024$), but not in brief interventions in tobacco cessation ($p=0.784$). There were no statistically significant differences between private and public sector respondents in referring patients to the weight management service ($p=0.064$), smoking cessation clinic ($p=0.514$), lifestyle clinic ($p=0.758$), chronic disease management clinic ($p=0.060$), and chronic kidney disease prevention clinic ($p=0.801$).

Findings from the structured interviews

Various common themes contributing to the low response rate were provided by the participants. These included feedback on length and timing of the questionnaire, logistical issues, such as incorrect email addresses, and participant related factors, such as apathy due to receiving multiple questionnaires, a lack of change despite similar studies, and lack of time to reply to the questionnaire.

Respondents attributed time constraints as a reason for the discrepancies observed in the clinical scenarios on what should be done and what is done in practice. Both the GP Trainer and GP Trainee highlighted the patient's expectations and agenda as another reason for this discrepancy. Discrepancies in practice can be addressed through Clinical Professional Development (CPD) sessions and training, a longer initial consultation, specific clinics focused solely on delivering health promotion advice and integrating electronic alerts that encourage doctors to carry out a health promotion intervention. The promotion of the appointment system within the primary healthcare department can strengthen the doctor-patient relationship through continuity of

care. Comprehensive training to improve health promotion delivery and incorporating health promotion advice as part of the treatment plan were emphasised. The importance of training featured heavily throughout the discussions, with emphasis on training the trainees. Training sessions can be held in small group sessions, lectures or workshops, but the training method should contain a theoretical and practical component where the individual can receive feedback. The presence of community based ancillary facilities and GP clinics set up exclusively for delivering health promotion would provide patients with tailored and specific advice. A yearly health check system with subsequent referral process, if necessary, was also suggested. The integration of brief intervention flowcharts into practice, possibly through the electronic patient record, is another initiative which would aid in the delivery of health promotion advice. Adequate resources, especially human resources, are vital in implementing these recommendations.

When discussing factors that contribute to a lower perceived self-effectiveness in carrying out health promotion activities, several reasons were identified. These included the patient's reluctance to engage in health promotion behaviours, the respondents' personal experience and the training received in this field. Societal acceptance of smoking and alcohol drinking was suggested as a reason why respondents considered themselves to be less effective at promoting tobacco cessation and alcohol reduction compared to promoting exercise and weight loss. Respondents agreed that screening and brief interventions could be integrated into their practice following appropriate training. This could be supported through clinical decision support software in electronic patient records.

With regards to access to health promotion materials, respondents noted that they could be made more available by ensuring that physical copies are at hand during consultations. Improving the accessibility of health promotion messages can be achieved by streamlining the HPDP website to facilitate doctors and patients with accessing the materials. Waiting area

screens within clinics could be used to display health promotion advice. A greater emphasis on disseminating health promotion messages through social media and apps would improve visibility and engagement, particularly with a younger audience. Despite the digital shift, hard copies of health promotion material are still used, and efforts should be made for the material to be transported directly to the clinics while clinic management should ensure an adequate stock of these materials.

Health promotion training features throughout the family doctor specialisation programme. These are carried out through regular lectures, tutorials and reviews of video consultations focusing on health promotion advice. While training ideally should occur in small group sessions to improve abilities, webinars and lectures are also used. To enhance the ability to implement health promotion initiatives, group sessions incorporating educational and practical components, along with observation and feedback from trainers, are the most effective approach. The low referral rate to the prevention services was primarily attributed to a lack of awareness on the clinic's existence, clinic disruptions following the COVID-19 pandemic, unclear referral criteria and methods, and a poor opinion of the clinics' outcomes. Improving the referral rates to clinics focusing on health promotion could be achieved through regular reminders to family doctors via memo or email, highlighting the clinic's role and referral pathway, raising awareness through CPD sessions elaborating on clinic details and the potential benefits of referral, and providing new intakes of GP trainees with an orientation session on the availability of these clinics.

Making Every Contact Count (MECC) is a type of screening and brief interventions behaviour change strategy that leverages the countless daily interactions between organisations, individuals and others to help encourage positive changes in their physical and mental health, as well as overall well-being (World Health Organization, Regional Office for Europe, 2022b). When asked how the MECC programme can be implemented,

respondents noted that it is necessary to identify how to manage time constraints, raise awareness and training, and improve access of information for family doctors to give to their patients.

DISCUSSION

This study aimed to assess the knowledge, attitudes, skills and habits of Maltese family doctors and GP trainees in health promotion and disease prevention. The results from the clinical scenarios showed a consistent disparity between the belief that certain activities should be carried out (such as promoting physical activity, promoting weight loss and BMI estimation) and the actual implementation of these activities by respondents. Reasons that could explain these differences at the organisational, structural and professional levels include time constraints, low prioritisation of health behaviour change, perceptions of the health care professionals' role, negative attitudes and a lack of necessary skills and knowledge (Strid, Wallin and Nilsagård, 2023). Interestingly, for some activities, the percentage of doctors who carried out the activity was higher than the percentage of doctors who felt the activity should be done. Possible explanations include over testing despite perceived clinical utility (O'Sullivan et al., 2018), and social desirability bias to conform to perceived response acceptability (Holden and Passey, 2009). Another possible explanation relates to the questionnaire format; the questions "should it be done?" and "do I do it?" in the online questionnaire were not side-by-side as they were in the paper-based questionnaire, but after each other.

Across the three studies spanning over 20 years, respondents are reporting less difficulty in carrying out disease prevention and health promotional activities (Sammut, 2006; Pace, Sammut and Gauci, 2014). The primary barrier reported remains lack of time due to a heavy workload, which appears to be considerably worse when compared to previous studies (Sammut, 2006; Pace, Sammut and Gauci, 2014).

The WHO recognises brief interventions as effective for quitting tobacco, reducing alcohol use, increasing physical activity, promoting

healthy eating, and managing weight (World Health Organization, Regional Office for Europe, 2022b). Compared to the 2011 study, respondents felt that they were less effective at promoting tobacco cessation, alcohol reduction, and regular exercise, and more effective at promoting weight loss (Pace, Sammut and Gauci, 2014), with respondents in private practice feeling more effective than respondents working in public centres. The introduction of the training programme was an opportunity to train family doctors to integrate preventive care into regular primary health care service delivery. However, training does not appear to have been actively translated to practice. Despite the need for further training, respondents reported variable interest in receiving training on brief interventions. GPs working in private practice appeared less interested when compared to their colleagues working within public centres, and this observation could be partly explained by the fact that they feel more effective in delivering health promotion activities. An important consideration is the apparent poor access to health promotional materials, which are critical tools that can be used by respondents for the management of risk factors when they have no time available for other, more time-consuming brief interventions (World Health Organization, Regional Office for Europe, 2022b). Each professional encounter should be an opportunity to guide patients towards a healthier lifestyle (World Health Organization, Regional Office for Europe, 2022b). A stronger effort is needed to re-organise and re-orientate primary care practices towards the "brief interventions" approach which has been shown in literature to be relatively cheap and certainly more effective.

Referral frequencies to prevention clinics varied, with weight management and smoking cessation clinics being the most popular. Proximity between clinics in public centres to specific intervention clinics within the primary healthcare system is seemingly not more conducive for doctors working in the public to refer patients and the reasons for this merit further exploration. Other reasons may be more critical to improve referrals towards preventive clinics such as improving

coordination of services, strengthening of the public sector, and increasing public awareness of the services (Eskandari, Abbaszadeh and Borhani, 2013).

The implementation of disease prevention and health promotion activities in primary care is influenced by various factors organised into a five-level ecological model: intrapersonal, interpersonal, institutional, community and public policy. Intrapersonal factors include professionals' beliefs, experiences, skills, knowledge and self-concept regarding disease prevention and health promotion activities. Interpersonal factors involve the attitudes and behaviours of patients, specialists, practice managers and colleagues, which impact the feasibility of implementing disease prevention and health promotion activities. Institutional factors recognise primary care as suitable for disease prevention and health promotion activities but highlight obstacles such as workload, time constraints, limited referral resources and the dominance of the biomedical model, which focuses on disease treatment. The effectiveness of financial incentives and tools like guidelines and reminders depends on professionals' attitudes toward them. Community factors encompass patients' social and cultural characteristics (e.g. religion, financial resources), local referral resources, media messages, pharmaceutical industry campaigns and the emphasis on disease prevention and health promotion activities in university curricula. Public policy influences resource distribution, thereby impacting the implementation of disease prevention and health promotion activities (Rubio-Valera et al., 2014).

Strength and limitations

The study's strength is that it is a follow-up study spanning 20 years of primary health care health promotion and disease prevention practice in Malta. The study had several limitations that need to be taken into consideration when interpreting the results. The study had a low response rate of 9.8% leading to several significant limitations. Such studies have limited external validity of the results, particularly as doctors who are

interested in the subject could have been more inclined to participate leading to non-response bias. Distribution of the questionnaire among the whole population softened the impact of the low response rate; however, under- or over-representation of certain groups could lead to sampling bias and limited generalisability of the results. Social desirability bias could have arisen as participants may have been inclined to provide answers that they believe will make them look good, particularly during the structured interviews, while the small number of responses also limits the statistical power of the study. The actual response rate is probably higher, as the actual number of family doctors actively practising in Malta is unknown while those on the list may not all be practicing.

CONCLUSION

Whilst taking into consideration the study limitations, this study evaluated the knowledge, attitudes, skills and habits of family doctors regarding disease prevention and health promotion interventions, and highlighted the key barriers encountered in implementing a "Making Every Contact Count!" approach. Several actions that can enhance the practices of family doctors were proposed by respondents.

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A one-month demographic analysis of ophthalmic referrals to the Emergency Ophthalmic Service at Mater Dei Hospital, Malta

Dr Gloria MONTEBELLO, Dr Elinor MICALLEF ISHMAEL and Dr Xeniya MARKU

ABSTRACT

Background

Prompt recognition and referral of patients with ophthalmic emergencies are essential for preserving vision. For this reason, importance should be given to researching how the ophthalmic emergency services are utilized in Malta in order to facilitate improvements.

Objective

This demographic study, conducted over 32 days at Mater Dei Hospital in Malta, aimed to explore the characteristics of patients referred to the ophthalmic emergency department, including patient demographics, referral sources and reasons for referral, providing insights into the utilization of emergency services.

Method

This retrospective demographic study was carried out over the span of one month (from December 2023 to January 2024). Patient referral data was gathered from emergency department triage sheets, followed by the collection of demographic data (including gender, age, place of habitation,

ethnicity, source of referral, presenting complaint and necessity for further ophthalmic review) from the Clinical Patient Administration System for all Ophthalmic Emergency Services attendees.

Results

Findings revealed gender disparities, age-related trends, regional distribution and the significance of self-referrals. Notably, 18% of cases required further ophthalmic review, emphasizing the complexity of ocular conditions.

Conclusion

This study offered valuable insights into the different characteristics of patients accessing the Maltese Ophthalmic Emergency Service at Mater Dei Hospital. It underscored the significant number of patients utilizing this service and revealed demographic trends and referral sources. By acknowledging these trends, it should become possible to allocate resources more effectively and target interventions to meet the diverse needs of the community. While acknowledging its limitations, the aims and objectives of this study were achieved.

Keywords

Demographic analysis; emergency service, hospital; Malta; ophthalmology; retrospective study.

INTRODUCTION

Prompt recognition and referral of patients with ophthalmic emergencies is crucial to preserving vision (Langan, 2021). Such ophthalmic cases require a review by a specialist having a unique subset of knowledge/examination techniques/equipment (Grewal & Gabr, 2021). Prompt recognition and referral of such patients is just as important as having the necessary capacity in the ophthalmic department for prompt review of said patients.

Stridhar et al (2015) conducted a demographic study examining the patterns of utilization of the ophthalmology emergency department (ED) which showed that more than one-third of patients accessing the ophthalmic ED were classified as non-emergent and did not actually require ophthalmic emergency services (OES).

In Malta, emergency ophthalmic referrals are seen by doctors within the Ophthalmic Outpatients/Ophthalmic Ward (depending on the time of day) based within Mater Dei Hospital (MDH) (Galdas et al., 2005). Moreover, Primary Healthcare (PHC) in Malta currently offers limited ophthalmic services (including optometry, glaucoma clinic and screening) (Government of Malta, 2021a). The provision of these services all require specialised equipment, training time and funding for trainers. Urgent cases can also be seen by a general practitioner (GP) within a health centre (HC) and treated if the appropriate equipment is available and if the level of exposure to ophthalmology is sufficient to ensure a safe outcome.

Patients requiring emergency ophthalmic care at MDH are typically referred from the HC, a private GP (Government of Malta, 2021b), or may present themselves directly at the MDH ED for registration and triage according to the urgency of concern.

By carrying out this demographic study, the authors aimed to highlight any demographic trends in how the Maltese OES are being utilized, understand cohort patterns of attendance and referral patterns to OES, and hence use this data to optimize resource allocation and service delivery.

Objectives

The objectives of this study were:

- The evaluation of the number of patients who were referred to the OES (over a 32-day period) within MDH based on patient characteristics and reasons for referral;
- The identification of any areas for improvement in the OES in MDH and community services.

METHOD

This retrospective demographic study was carried out over the span of one month (from December 2023 to January 2024). Approval was sought from the Departmental Chairperson of Ophthalmology at MDH prior to collection of data. Ethical approval was not required for this study since the authors did not make any contact with the patients involved, patients were not identifiable from data collected and all raw data was deleted after data processing. Data was analyzed using descriptive statistics to identify patterns in demographics and referral sources. Nonparametric tests were used to assess the significance of differences in referral patterns across demographic groups.

The inclusion criteria for this study included all the patients who attended the OES after being registered through the ED triage system. Patient demographics and referral data were gathered from ED triage sheets, followed by collection of the following information from the Clinical Patient Administration System (CPAS):

- Day of presentation to the ED
- Gender/age/habitation/ethnicity
- Source of referral
- Time of registration at the ED
- Presenting complaint (categorized into groups as can be seen in Table 1)

- Whether the patient required further ophthalmic review
- Whether it was a new case/review/consultation

Any patients already admitted in MDH at the time of review were excluded from the data set. Paediatric patients were grouped together with the adult population, without any further differentiation.

To maintain participant anonymity, each patient then received a code. The collected and anonymised data were analysed to reveal any pattern of attendance with the following formulation of results, conclusions, and recommendations.

The categories in Table 1 were formulated to create a classification of presenting complaints which were identified during history taking. Whilst the table does not include scientific diagnoses, it includes the patients' complaints and reason why they attended the OES. The exact diagnosis was not the scope of this study.

Table 1 - Categories of presenting complaints in the Ophthalmic Emergency Department

Injuries	Eye discomfort and redness	Intraocular pressure
<ul style="list-style-type: none"> • Foreign body • Chemical injury • Trauma (direct injury) 	<ul style="list-style-type: none"> • Eye irritation • Eye redness • Eye pain 	<ul style="list-style-type: none"> • Increase in intra-ocular pressure (IOP) • High IOP
Ocular conditions and infections	Vision issues	Lacrimation and ocular surface issues
<ul style="list-style-type: none"> • Eye infection • Herpes Zoster • CRVO (central retinal vein occlusion) • Recurrent uveitis • Chalazion • Retinal haemorrhage 	<ul style="list-style-type: none"> • Blurred vision • Eye floaters • Visual disturbances • Decrease in visual acuity • Blurred vision and flashes • Transient decrease in vision • Vision loss • Binocular diplopia 	<ul style="list-style-type: none"> • Increased/excess lacrimation • Subconjunctival haemorrhage • Peri-orbital redness
Neurological conditions	Eyelid issues	Miscellaneous
<ul style="list-style-type: none"> • Headache • Bell's Palsy • Migraine with aura • Left optic disc swelling 	<ul style="list-style-type: none"> • Eyelid swelling • Eyelid twitching • Eyelid drooping 	<ul style="list-style-type: none"> • Eye check-up • Photosensitivity • Post-operative complications

RESULTS

The results cover data collected over 32 reviewed days with a total of 835 patients who presented to OES.

As can be seen in Figure 1, a larger proportion of males were found to make use of OES in comparison to females.

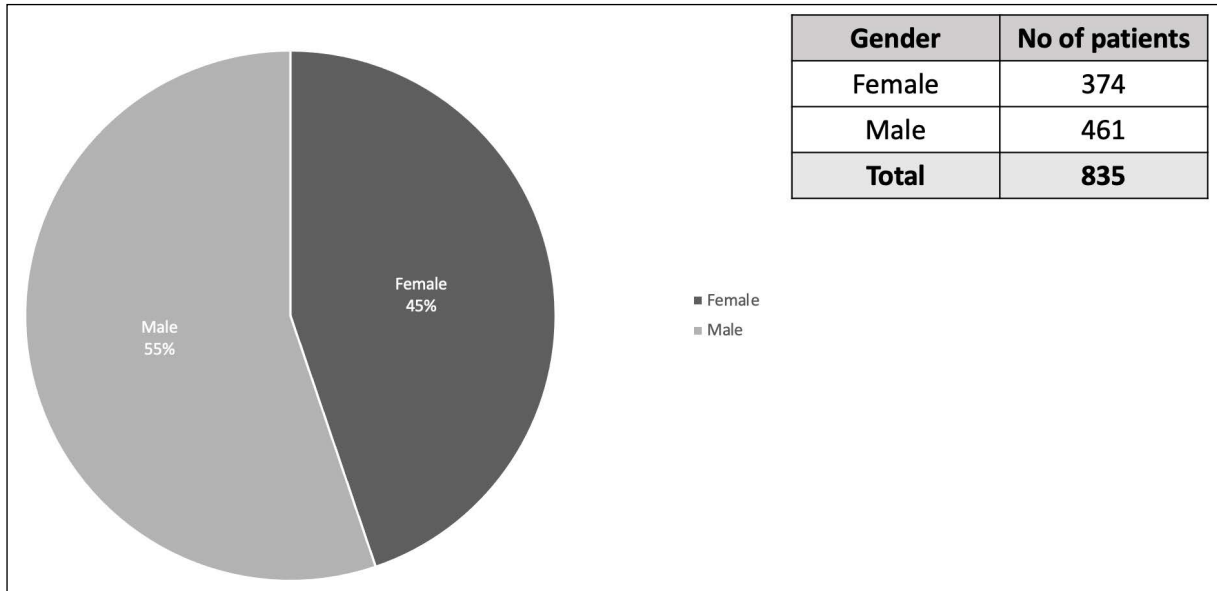


Figure 1 - Percentage of male vs female attendees at the Ophthalmic Emergency Department

The majority of the older population (>50 years old) attended OES in the morning, in comparison to those in their 40's who were more likely to make use of OES in the afternoon, evening and night. Moreover, Figure 2 also outlines that even though work-load was almost evenly distributed throughout the four mentioned time periods, OES was most frequently utilized in the morning and afternoon, with the evening being the least utilized time slot.

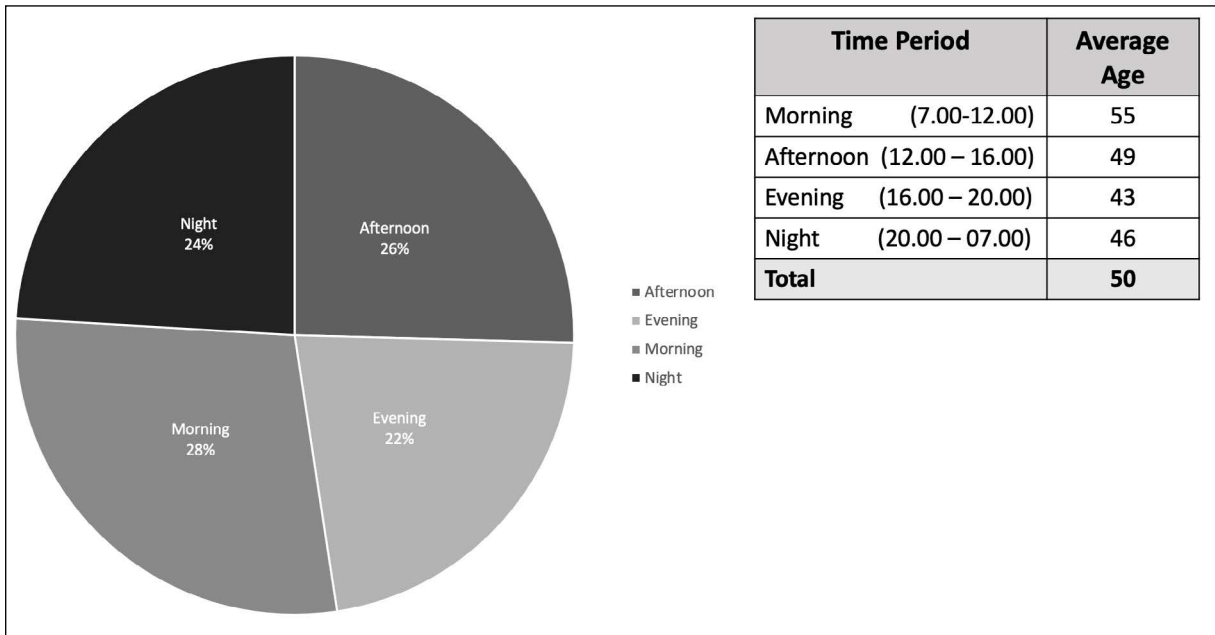


Figure 2 - Average age of Ophthalmic Emergency attendees according to time period

From the collected data, the majority of patients making use of OES originated from the central and south regions of Malta, with only 25% of attendees being from the north regions, and only 2 patients originating from the island of Gozo. These findings can be appreciated in Figure 3.

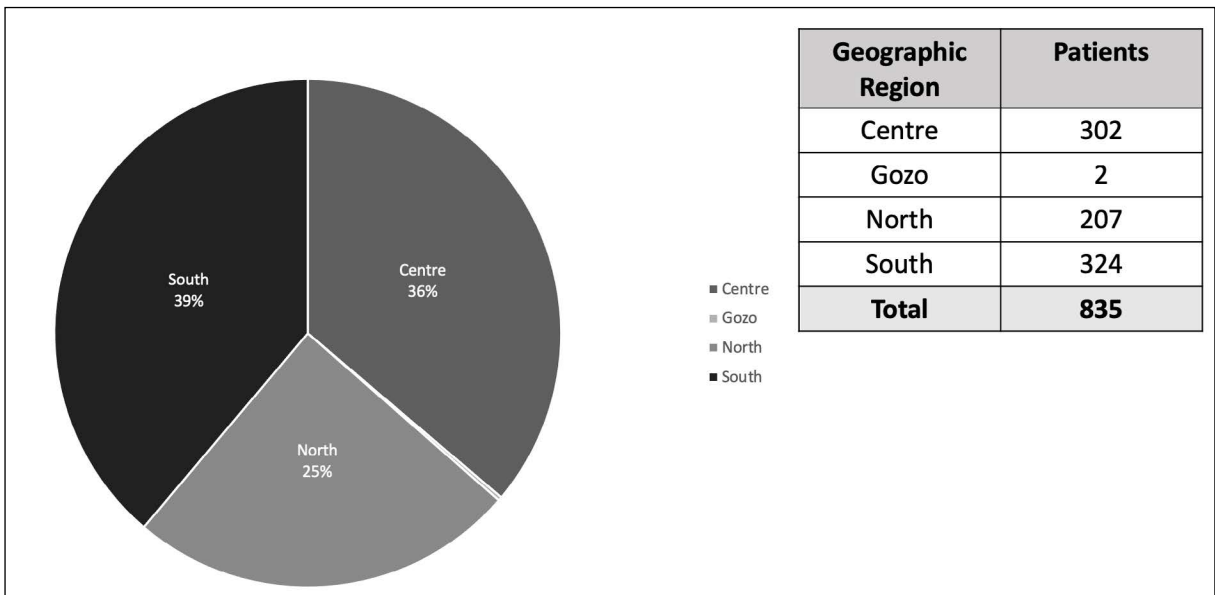


Figure 3 - Percentage of Ophthalmic Emergency attendees from north, central and south regions of Malta

As illustrated in Figure 4, the large majority of OES attendees were of Maltese Nationality. Approximately 14% OES attendees were of foreign nationality and therefore the patient pool consisted of a diverse mix of local and foreign individuals.

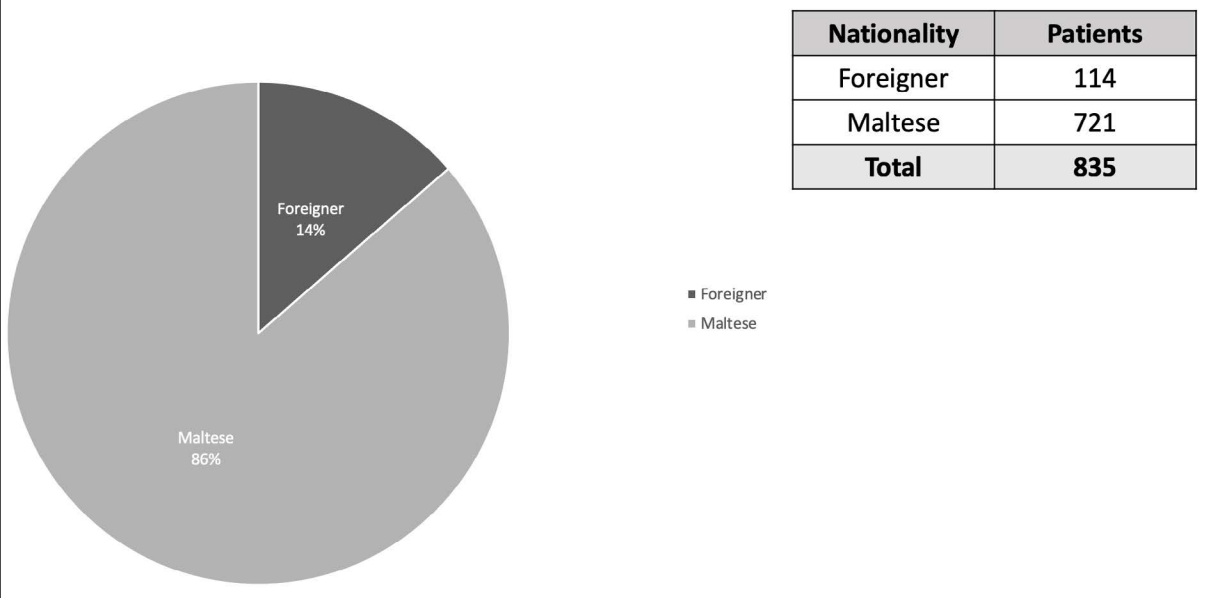


Figure 4 - Percentage of Ophthalmic Emergency attendees who were Maltese and foreigners

A large discrepancy in sources of referral to OES can be easily noted in Figure 5. The majority of OES attendees (84%, n= 698) self-referred themselves to MDH OES, with only 13% (n= 107) having been formally referred from a healthcare centre. 'GP referral' signifies private GP visits whilst 'Healthcare Centre' refers to GP reviews done at a government community treatment hub.

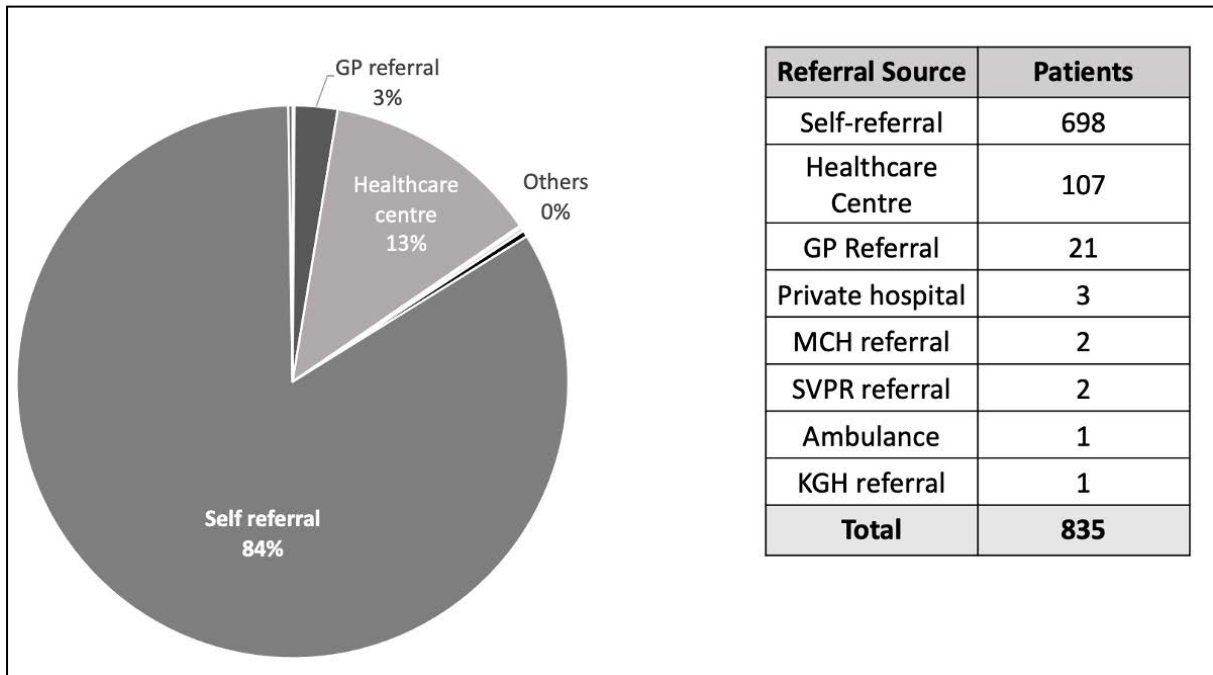


Figure 5 - Source of referral to Ophthalmic Emergency Services

A large variety of presenting complaints are routinely encountered on an every-day basis at OES. The most commonly encountered presenting complaints (as can be noted in Table 2) were ocular foreign bodies, eye irritation, eye redness and eye discharge.

Table 2 - Commonest types of Ophthalmic Presenting Complaints

Types of Ophthalmic presenting complaints	Number of such complaints encountered
Foreign body	170
Eye irritation	112
Eye redness	97
Eye discharge	51
Trauma (direct injury)	49
Post-operative complications	47
Blurred vision	43
Eye floaters	41
Eye pain	36
Peri-orbital swelling	29
Visual disturbances	21
Eye flashes	17
Chalazion	14
Decrease in visual acuity	13
Herpes Zoster / Herpes Simplex	13

Vision loss	11
Increased lacrimation	10
Chemical injury	9
Headache	6
High IOP	7
Trichiasis;	4
Subconjunctival haemorrhage	4
Bell's Palsy	4
Photophobia	3
Eyelid twitching	2
Binocular diplopia	2
Recurrent uveitis	2
Diplopia	2
Eye check-up	2
Eye infection	1
Photosensitivity	1
Unequal pupils	1
Blurred vision and flashes	1
Eyelid swelling	1
Eye swelling	1
Eyelid drooping	1
Retinal haemorrhage	1
Transient decrease in vision	1
Optic disc swelling	1
Migraine with aura	1
Peri-Orbital Redness	1
CRVO	1
Headache and eye pain	1
GRAND TOTAL	835

Figure 6 outlines that a relatively minor proportion of all reviewed cases at OES required further ophthalmic review with the remaining being reviewed only once with no need for further reviews.

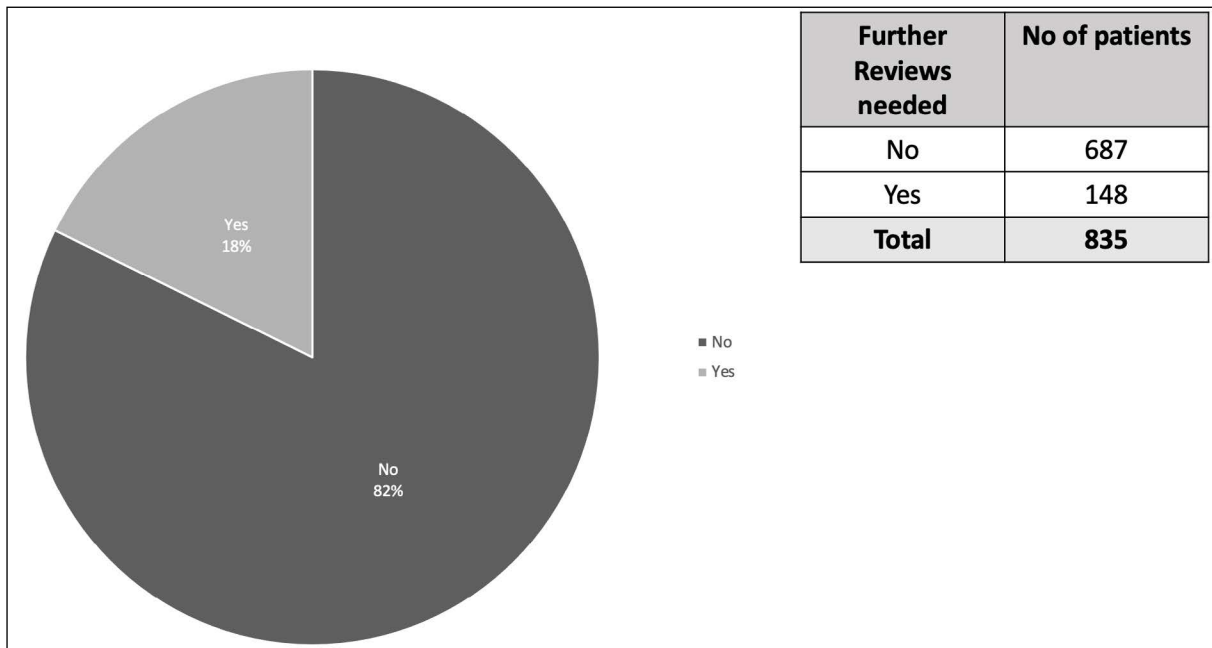


Figure 6 - Ophthalmic Emergency Cases requiring further ophthalmic review

Table 3 gives an overview of the ophthalmic complaints requiring follow up at ophthalmic outpatients. Reasons for follow ups may include the need of a second opinion, the need for further specialised equipment or the monitoring of disease progress with treatment given.

Table 3 - Which ophthalmic presentations warranted further ophthalmic review

Types of Ophthalmic Conditions	Number requiring further Ophthalmic Review
Foreign body	28
Eye redness	21
Eye irritation	18
Trauma (direct injury)	12
Eye pain	8
Blurred vision	8
Post-operative complications	7
Eye discharge	6
Eye floaters	6
Visual disturbances	3
Subconjunctival haemorrhage	3
Chemical injury	3
Vision loss	3
Periorbital swelling	2
High IOP	2
Decrease in visual acuity	2

Bell's Palsy	2
Chalazion	2
Transient decrease in vision	1
CRVO	1
Photophobia	1
Eye lacrimation	1
Blurred vision and flashes	1
Increased lacrimation	1
Eye flashes	1
Trichiasis	1
Increase in IOP	1
Binocular diplopia	1
Herpes Zoster	1
Eyelid drooping	1
GRAND TOTAL	148

DISCUSSION

This study reveals significant gender and age disparities in OES utilization, with a majority of self-referrals, indicating potential gaps in primary care ophthalmic services.

Gender discrepancy

Figure 1 outlines the gender distribution of OES attendees at MDH. A male prevalence of attendees can be noted, which could be secondary, but not limited, to health seeking behaviour and occupational factors.

Regarding health seeking behaviour, research has proven men to be less likely to seek medical help for their ailments when compared to women, leading to an increased risk of male patients requiring emergency care over females (Galdas et al., 2005).

As to occupational factors, a percentage of the commonest ocular injuries (including corneal foreign bodies and abrasions) happen in the workplace. Moreover, the occupations harbouring the biggest risk for ocular injuries include welders, metalworkers, builders and farmers, all of which are male-dominated occupations (Kyriakaki et al., 2021).

Age discrepancy at different time sectors

It is clear from the obtained results (Figure 2) that the older population has a higher likelihood of attending OES in the morning, while the younger group tends to favour attendance in the afternoon, evening, or even at night. This could be attributed to the impact of work and daily routines on the patient's availability to attend OES.

The older population is more inclined to be in retirement, reducing the likelihood of additional commitments such as caring for young children or working regular office hours - as a result, they tend to seek OES in the morning, according to their rather more flexible schedules. In contrast, the younger population, often active in the workforce and managing various commitments, is less prone to seeking emergency assistance during morning hours.

Additionally, the older population demonstrated a higher likelihood of seeking healthcare compared to the younger groups (Adamson et al., 2008). This correlates with our findings of the average age of OES attendees being 50 years old.

Regional distribution

As can be seen on Figure 3, the majority of OES attendees originate from the south region of Malta (39%), followed by those from the central (36%), north (25%) and Gozo (less than 1%). The lowest OES attendance noted among Gozitans could be attributed to transportation/travel and accessibility to healthcare services.

Transportation barriers are essentially equivalent to healthcare barriers as they lead to reduced healthcare utilization (Syed et al., 2013). Residents of Gozo will find it extremely cumbersome to travel to Malta (especially at later times of the day) to make use of OES. This could explain the significant disparity in OES attendance between Gozitans and patients residing in Malta, as indicated by the results.

Because of its location in Malta, individuals from Gozo may experience limited accessibility to the OES at MDH, which could discourage Gozitan patients from seeking help there.

Furthermore, the results indicated that the majority of OES-seeking patients came from the south and central regions of Malta, with the north region slightly lagging behind. This difference may be attributed to:

- The higher population density in the south and central regions of Malta.
- An elevated usage of private healthcare in the north of Malta, resulting in lower utilization of public healthcare (Malta was found to have the fourth highest out-of-pocket spending for private medical care in the EU [Zammit, 2022]).

Recognizing this attendance gap is vital for brainstorming ways to enhance the OES and effectively reach underserved segments of the Maltese population, such as considering the provision of EOS in Gozo.

Discrepancy in nationality

Figure 4 outlines that 86% of patients were noted to be of Maltese origin whilst the remaining 14% were foreigners. The increasing percentage of foreign patients attending OES can be an

indication of the progressively increasing foreign population in Malta. Moreover, it could also point towards increased healthcare inclusivity and accessibility. It is however important to keep in mind that even though a proportion of OES attendees are foreign, the majority of patients were still of Maltese origin. This observation itself may indicate a lack of awareness among the foreign population regarding accessibility to our healthcare system.

Sources of referral

As shown in Figure 5, the high rate of self-referrals suggests inadequate access to primary ophthalmic care. This finding underscores the crucial role of GPs and primary healthcare in assessing patients locally and guiding them to OES when needed. Despite the above, only a relatively small percentage of patients (15.5%) were referred to OES through health centers or GPs, with the majority (84%) choosing to directly present to the ED. Various reasons could account for this, including but not limited to the following:

- The elevated rates of self-referral highlight the population's heightened awareness of eye health and the significance of seeking prompt medical attention.
- Alternatively, the increase in self-referral rates may indicate community lack of awareness of the services offered at PHC, leading individuals to completely bypass it and directly seek assistance from the ED. Considering this perspective, dedicating additional resources to PHC could potentially decrease self-referrals to OES, thereby reducing the number of cases unnecessarily presenting at the hospital that could have been adequately managed at PHC.

Therefore, acknowledging this trend is crucial for optimizing resource allocation to PHC, with the goal of improving patient satisfaction and reducing the occurrences of self-referrals.

Moreover, as can be seen in Table 2, most common presenting complaints include foreign bodies, eye irritation and eye redness - which can be adequately managed in the PHC setting, should the latter have the necessary equipment

and training. This finding further highlights the need of providing more resources to PHC in order to increase patient satisfaction and ultimately reduce the load on OES.

Cases requiring further ophthalmic review

A significant discovery in the analysis revealed that the majority of patients seeking care at the OES - 82% - required further ophthalmic review, as seen in Figure 6, emphasizing the complexity of the cases encountered.

This observation sheds light on the intricate nature of ophthalmic diseases and the challenges associated with their treatment. It emphasizes the multifaceted aspects involved in addressing eye-related emergencies, indicating that a comprehensive and prolonged approach is often necessary for effective management.

Moreover, the fact that a substantial portion of cases require multiple reviews underscores the importance of having a dedicated OES and maintaining such specialized services. These services not only cater to the immediate needs of patients but also ensure ongoing and thorough care for complex ophthalmic conditions, thereby enhancing the overall quality and efficacy of eye healthcare provision.

In a similar study by Gavin, 2017, a total of 377,000 ophthalmic emergency room visits were examined over a 14-year period. It was noted that only about 25,300 (14.9%) of those cases actually required OES, with the rest being suitable for adequate management in non-emergency settings. This study went further to recommend ways of reducing attendance of non-emergent cases to OES, with the main strategy being creation of incentives for primary care providers and eye specialists to establish after-hours services. This was deemed to be beneficial for the younger or economically disadvantaged portions of population who may find difficulties taking time off for an eye appointment and may consequently opt to utilize OES during the night, even when their cases are non-emergent.

Moreover, Channa et al., 2016 once again identified a male preponderance to Ophthalmic ED attendees, with a larger percentage of non-emergent cases making up the case load – more than 4 million visits to the Ophthalmic ED had occurred between the years of 2006 and 2011 for non-emergent conditions such as conjunctivitis, subconjunctival haemorrhages and styes. This study further reinforced the importance of shifting as many of non-emergent cases towards community clinics/outpatient eye clinics. Such approach aids in optimizing resource allocation at the ED level, ensuring better healthcare provision for patients choosing community/eye clinic reviews, timely care for those with truly emergent ophthalmic conditions, and an overall substantial reduction in healthcare costs (Channa, et al., 2016).

Limitations

The study's retrospective design may introduce selection bias, as data were only collected from one hospital, as well as seasonal bias which could result in skewed data due to holiday-related behaviors, travel patterns and other seasonal variations. Future research should include multiple centres over a longer period to enhance generalizability.

Data was gathered exclusively from one source – the government national hospital – omitting emergency ophthalmic referrals to private clinics. The time of registration at the ED may not precisely reflect the time of clinical review due to varying waiting times. Data collection was conducted over only one month, potentially limiting the representation of seasonal variations/longer-term trends.

Many patients presented with overlapping and multiple complaints, often non-specific in nature, posing challenges in categorization and analysis. Emergency ophthalmic referrals for patients who were admitted to MDH were excluded from the study, potentially influencing the overall findings.

RECOMMENDATIONS

There is always room for improvement, and in the context of this retrospective demographic study, while acknowledging its generalizability limitation, the following recommendations can be taken into account for future research and practice enhancement.

Implementing a Continuous Quality Improvement (CQI) programme

Establishing a dedicated initiative within the OES with the goal of monitoring and improving the quality of care provided would have a positive impact on both OES at MDH and PHC. Additionally, conducting regular reviews and updates of protocols and standard operating procedures (SOPs) based on the insights gained from this demographic study and subsequent analyses would contribute to the overall improvement of OES functioning.

Establishing a clinical practice guideline

Guidelines, preferably in the short and visual form, should be created and disseminated amongst GP clinics and HCs, specifying ophthalmic emergency clinical presentations and management pathways (with a clear outline of which cases would warrant an MDH OES review and those only requiring an urgent outpatient appointment). The most common and non-complicated presentations such as foreign body, viral conjunctivitis or subconjunctival haemorrhage (which do not require specialist input) can potentially be managed in the community/PHC should the necessary guidelines be present.

Despite the need of the above-mentioned guidelines, further education regarding management of ocular emergencies should be provided to GP and PHC service workers. However, this needs to be part and parcel with providing quality basic ophthalmology equipment at all centres which is serviced regularly.

Increasing the time of clinical training in medical school

Currently the observation and exposure time in ophthalmology for medical students is limited to a one-week placement as per the curriculum,

and is scheduled in most of the cases prior to the ophthalmology lectures. Earlier and more efficient clinical exposure of the future healthcare professionals should potentially improve the PHC management of ophthalmic emergencies and further decrease the workload on the MDH OES.

General population educational campaigns on eye health

Public awareness campaigns should be introduced, aiming to educate the community about common eye conditions, the importance of regular eye check-ups, and when to seek emergency eye care. Moreover, collaboration with primary healthcare providers in disseminating information on preventive measures should be one of the priority topics in improvement of the OES system in Malta

Implementing continuous analysis

The data collection period for this study should be extended in order to allow for a more extensive analysis of demographic trends and patterns of use of OES. Additionally, it may be worth analysing a broader range of demographic data such as socioeconomic status, employment status and education level. Paying attention to these groups of demographics will allow the researcher to highlight any patterns in the social determinants of ophthalmic health and thus improve the awareness and self-referral rates

One should also consider leveraging qualitative research methods, including interviews or focus groups, to investigate the patients' perspectives, experiences and any barriers they might encounter in utilizing OES. This approach aims to provide a richer and more nuanced understanding of the patient's journey and can offer valuable insights for further optimizing OES accessibility and effectiveness.

Implementing the aforementioned recommendations in future studies may contribute to achieving a more comprehensive understanding of the demographic data pertaining to patients utilizing OES. Furthermore, this proactive approach could enhance the

optimization of care delivery, ultimately leading to improved patient satisfaction and outcomes.

CONCLUSION

This retrospective demographic study offered valuable insights into the different characteristics of all patients accessing the OES at MDH over a 32-day period. This study successfully identified key demographic trends and referral patterns in Malta's OES, revealing critical areas for improvement in primary care ophthalmic services. However, the study's limited scope necessitates further research to confirm these findings and develop targeted interventions. By acknowledging these trends, it should become possible to allocate resources more effectively and target interventions to meet the diverse needs of the community. Overall, the aims and objectives of this study have been achieved throughout the data collection and analysis, while acknowledging its generalizability limitation.

Moving forward, the findings of this study can serve as a foundation for future research endeavours and quality improvement initiatives aimed at optimizing OES delivery at MDH and within the community. In conclusion, this study sheds light on numerous demographic trends among OES patients, providing a framework for enhancing the quality of service provided by OES and improving patient outcomes in the long term.

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A study evaluating the Deprescribing Guideline on Anticholinergic Drugs in a long-term care facility in Malta

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ABSTRACT

Background

This study synthesizes the 'Deprescribing Guideline: Anticholinergic Drugs' from Mater Dei Hospital in Malta, emphasizing the critical role of medication choice in minimizing side effects for elderly patients, particularly those experiencing polypharmacy. The guideline employs the Anticholinergic Burden (ACB) score, with a cumulative score of 3+ correlating with elevated cognitive impairment and mortality. Polypharmacy, often linked to confusion and increased morbidity in the elderly, necessitates a proactive approach to medication management. The guideline recommends alternative medications with reduced anticholinergic side effects and prompts clinicians to review treatment charts.

Objective

To identify treatment charts with an ACB score exceeding 2 and assess adherence to the guideline.

Method

Data was collected retrospectively and all treatment charts valid in June 2023 were evaluated within the New Block at the long-term care facility St Vincent De Paul Residence (SVPR).

Results

The findings revealed a notable prevalence of such charts, highlighting the imperative to address the anticholinergic burden in elderly patients. Evaluation of adherence indicated room for improvement in implementing deprescribing strategies.

Conclusion

This study underscores the significance of the Mater Dei Hospital guideline in optimizing medication regimens for elderly individuals, advocating for a proactive approach to enhance patient outcomes and reduce associated risks.

Key Words

Anticholinergic, deprescribing, elderly, patients, polypharmacy

BACKGROUND

The 'Deprescribing Guideline: Anticholinergic Drugs' issued by Mater Dei Hospital (MDH), Malta's government general hospital, highlights the need to increase awareness regarding the choice of medication keeping the side effect profile in mind (Clinical Practice Guidelines, 2023). The guideline uses the Anticholinergic Burden (ACB) score to quantify the anticholinergic effect of drugs on elderly patients, especially those with polypharmacy. A higher cumulative score (3+) is associated with increased cognitive impairment and mortality.

Good prescribing practices include deprescribing as an integral concept of patient care. Deprescribing should be encouraged to eliminate expected adverse drug reactions, limit polypharmacy, especially in the comorbid population, and also to align treatment plans with the team's goals of care and life expectancy (Krishnaswami et al, 2019).

Polypharmacy is associated with confusion, dizziness and increased morbidity rates, especially in the older population. The Deprescribing Guideline on Anticholinergic Drugs provides alternative medications that carry a decreased anticholinergic side effect profile and encourages clinicians to review treatment charts accordingly. The guideline highlights common drugs carrying an ACB score of 2.

Objective

This study aimed to identify treatment charts with an ACB score of >2. If the score was >2, adherence to the guideline was checked by seeing whether an attempt to decrease medication dose, an attempt to change medication, and an attempt to stop medication within the past 3 months were being carried out.

METHOD

All treatment charts valid in June 2023 within the government long-term care facility for the elderly, St Vincent De Paul Residence's (SVPR) New Block were evaluated. A Microsoft Excel® sheet was created to input the data collected systematically. After authorisation was obtained,

data was collected anonymously from medical notes and treatment charts. Note was made of treatment plans carrying an ACB score of >2. The ACB calculator was used to work out the individual ACB carried by each drug and to calculate the cumulative score of each chart. The ACB Calculator is a validated tool for assessing ACB. The National Institute for Health and Care Excellence (NICE) states that there is sufficient evidence to recommend the score over other tools (Lisibach et al., 2020). Data collection included:

- The ward name and number of patients in the ward;
- The date of admission to SVPR;
- The patient's age and gender;
- Medications prescribed mentioned in the Deprescribing Guideline: Anticholinergic Drugs, and their respective ACB scores;
- The frequency and dosage of the medications mentioned above;
- The overall cumulative score of the medications when summed up together;
- Whether an attempt to reduce the dose, change the medication, or stop the medication was done;
- The indication for the medication;
- The date of the last psychiatric review.

The guideline indicates that for scores of >2, there should be an attempt to reduce the dose or change to an alternative medication. This was taken into consideration by noting whether a psychiatry review was done in the last three months and whether any changes made were documented. In other instances, at times the firm taking care of the ward made the necessary dose reductions or changes; however, the indication for the modification was not written. The aim was always to reduce the anticholinergic side effect burden.

The date of admission was recorded to distinguish between patients who have been recently admitted (e.g. less than a month), as opposed to patients who have been residents for longer, to evaluate whether this affects deprescribing patterns.

Before the commencement of data collection, authorization was granted with the permission and support of the medical superintendent / data protection office at St. Vincent de Paul. Since the research did not involve any contact or clinical assessments of patients, no permissions were sought from the Mental Health Commissioner or the Health Ethics Committee. All data was collected and analysed anonymously. All data was discarded once data interpretation was complete.

RESULTS

All treatment charts of patients were reviewed and included in this analysis, with a total of 502 patient treatment charts from 16 different

wards. Three of these are closed wards that are dedicated to patients with advanced dementia with behavioural and psychological symptoms of dementia (BPSD). The other thirteen wards are open wards with residents having mixed diagnoses.

One hundred and sixty-nine patient treatment charts out of the 502 (34%) had at least one medication with an ACB score of >2. Only 25 out of the 169 charts (15%) had an attempt to change treatment, as seen in Table 1. Twenty-nine percent of all treatment charts had at least 1 medication with an ACB score >2 and no attempt to change medications.

Table 1: Number of patients with an ACB score of >2, with an attempt to change medication

Gender	Number of patients	Number of attempts to change the medication	Percentage change
Female	114	16	14%
Male	55	9	16%
Total	169	25	15%

Most ACB medications that were adjusted are used to target depression, behavioural and psychological symptoms of dementia (BPSD), and difficult behaviour cases, as seen in Table 2. In the majority of patients, difficult behaviour is secondary to advanced dementia. This may reflect the progress of the condition with a response to medication. In 6 patients, no diagnosis or specified condition was mentioned in the file although treatment was being given. Out of the 169 treatment charts with an ACB >2, only 32 patients (19%) had a psychiatric review in the previous 3 months.

Table 2: Indication for medications and the number of treatment charts with an attempt to change or stop medications

Diagnosis	Number of patients	Treatment charts with an attempt to change or stop medications	Percentage change
Difficult behaviour	55	8	15%
Depression	52	10	19%
BPSD	9	1	11%
Schizophrenia	7	1	14%
Dementia	5	1	20%
Anxiety	5	1	20%
Paranoia	3	2	67%
Neuropathic pain	3	0	0%
Delusions	2	0	0%
Suicidality	2	0	0%
Alcoholism	2	0	0%
No diagnosis	5	0	0%

DISCUSSION

This study highlighted the deprescribing practices of medications that have a high anti-cholinergic side effect burden at SVPR's New Block. These findings and analysis can also be applied to all aspects of medical care as deprescribing is the role of every practitioner to prevent adverse effects of polypharmacy such as in primary care when caring for elderly patients.

Many medications such as tricyclic anti-depressants, anti-psychotics, anti-histamines, and anti-emetics have anticholinergic side effects, in addition to other common side effects (Tay, Soiza, and Mangoni, 2014). These medications are prescribed daily on a geriatric ward and hence out of 502 charts, 169 (34%) had a drug with an ACB score greater than 2, indicating a significant prevalence of side effect burden. In this case, the most common indications for anticholinergic prescribing were behaviour difficulties associated with BPSD, depression, and anxiety.

Anticholinergic drugs can affect both the central nervous system (CNS) and peripheral nervous system (PNS). If the CNS is affected, this may be evident by worsening cognitive function, a rapid increase in neurodegenerative processes, new onset psychotic or confusional symptoms, and functionality disturbances. Moreover, if the PNS is affected, symptoms may include a dry mouth, urinary retention, constipation, paralytic ileus, tachycardia and visual disturbance (López-Álvarez, Sevilla-Llewellyn-Jones and Agüera-Ortiz, 2019).

The relevance of this data is also supported by the findings in a study done by Pfistermeister et al. which concluded that there is a positive association between total anticholinergic cognitive burden and cognitive impairment in patients hospitalized in geriatric wards (Pfistermeister et al., 2017).

Medication availability as well as the cost of medications can pose challenges in practice. Some medications are not available on the national formulary and thus, the clinician is not able to prescribe certain medications, which in turn leads to prescribing a substitute which might not be the best treatment option for the patient when considering their side-effect profiles.

Moreover, many medications frequently prescribed for older adults are often not acknowledged for their anticholinergic effects. Consequently, clinicians typically prescribe these drugs based on their expected therapeutic advantages, neglecting to consider the potential risk of accumulating anticholinergic burden.

Regular medication reviews and providing education are common interventions that can help reduce the anticholinergic burden. Education can therefore help to deliver specific information regarding prescribing practices for elderly patients, errors associated with medications, and strategies aimed at preventing medication-related errors (Salahudeen et al., 2022).

In primary care, some of the challenges that may arise regarding deprescribing medications include a lack of continuity of care, time limitations during consultations, apprehension regarding the repercussions of reducing medication particularly concerning anticholinergic burden, and the intricacy of deprescribing interventions across various drug categories. Additionally, there is a reluctance among healthcare providers to reduce medication if it was initially prescribed by another clinician (Braithwaite et al., 2023).

Limitations

The data collected for this study was limited to a single hospital, SVPR, which affects the generalizability of the findings to a broader population. Additionally, many of the treated conditions are chronic, making treatment discontinuation a significant challenge. The psychiatric department also faces an overload of work, limiting the availability of staff for patient

reviews. Moreover, when deprescribing or switching to a safer alternative medication was attempted, the reasons for these changes were not documented in the patient's notes.

Recommendations

Based on the results, the following recommendations are proposed to improve clinical practice:

- To include a deprescribing exercise as a routine practice. Deprescribing has to be done with caution since certain mental states can pose a high risk to oneself and others.
- To identify the clinical reason for each prescribed drug (e.g. Table 2). This is helpful when discussing patients across specialties and also when it comes to deprescribing.
- In some conditions such as BPSD, alternative modes of treatment should be attempted for example non-pharmacological approaches. These include psychoeducation of ward staff and targeting the ward environment.
- Prescribed medications should be reviewed regularly and attempts to withdraw medications, especially with a high ACB, should be a priority by the caring firm.
- Deprescribing in severe mental illness should be done carefully, slowly, and in discussion with the patient and their responsible carers. In conditions such as schizophrenia and also depression, severe anxiety, and obsessive-compulsive disorder (OCD), deprescribing could be dangerous due to a high incidence of relapse.
- A careful review of the patient's psychiatric history should be done and involvement of a psychiatrist is highly recommended.
- To monitor interactions between psychiatric and non-psychiatric medications. Such overprescribed medications were found to be prescribed in the as needed (PRN) section e.g. prochlorperazine, codeine and hydroxyzine. These interactions should be targeted before deprescribing.
- To increase awareness and education regarding anticholinergic side effects on the elderly.

- To update the national formulary with medications that have a better side effect profile.
- To clearly document whether deprescribing or switching to another safer medication was attempted, and to document the reason for such changes.
- As this is the first cycle of the study, a second cycle is required to evaluate whether the recommended changes have been implemented.

CONCLUSION

Anticholinergic medications are widely prescribed in older adults, but their benefits must be greater than their risk of causing unnecessary adverse events, especially in this vulnerable age group. If possible, when there is a high ACB score, the medication's dose must be reduced, or the drug altered to another medication with less anticholinergic burden. Moreover, specialist psychiatry input must be sought to ensure the older adult is followed up and the necessary deprescribing is carried out.

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COVID-19 vaccination hesitancy amongst COVID-19-positive patients in a Maltese suburban population

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ABSTRACT

Background

The COVID-19 pandemic brought about unprecedented demands in primary care service provision and delivery. Vaccination helped to alleviate disease burden, control outbreaks, improve patient outcomes and reduce avoidable deaths. However, there is limited data on COVID-19 vaccination hesitancy on selectively suburban populations in island communities. It is imperative to identify the rationale behind vaccine hesitancy amongst patient subgroups.

Objectives

The aim of the study was to assess COVID-19 vaccination hesitancy amongst COVID-19-positive patients in a Maltese suburban population. The objectives of the analysis include assessing the patients' attitudes towards COVID-19 vaccination, providing information to facilitate the planning of vaccination campaigns and to inform the vaccine strategy.

Methods

A quantitative, retrospective, descriptive, cross-sectional study was performed. A telephone

consultation was conducted on a purposive sample of 700 patients who had a positive PCR test for SARS-CoV-2 between July and September 2021. The novel, validated 5C (Constraints/Confidence/Collective responsibility/Complacency/Calculation) scale was used amongst the unvaccinated/partially vaccinated patient population to analyse psychological antecedents of vaccination, facilitate diagnosis, address vaccine hesitancy and potentially, increase vaccine uptake. Statistical analysis was performed using the Statistical Package for the Social Sciences v27.

Results

Almost one-fifth of participants were unvaccinated or partially vaccinated. The most common psychological underpinnings of vaccine hesitancy were confidence and constraints. Collective responsibility was the least frequent psychological antecedent of vaccination.

Conclusion

This study provides information for healthcare professionals, researchers, educators and policymakers to guide resource allocation,

develop area-targeted public health programmes and mitigate the effects of vaccine hesitancy in suburban populations.

Key Words

Community health care; COVID-19; primary health care; vaccination; vaccine hesitancy.

INTRODUCTION

The COVID-19 pandemic has modified the multidimensional concept of primary care on 3 levels of care including the structure, process and outcomes (Rawaf *et al.*, 2020; Kringos *et al.*, 2010). Several methodological and conceptual challenges arise when developing country-specific and context-specific primary health care policies in island communities (Agius, 1990; Lamnisos, Lambrianidou and Middleton, 2019). It is thought that the small size of discrete geographically-defined communities, the limited variation in the degree of remoteness and the associated social homogeneity reduce the tendency for health and social discrepancies in island communities (Turrell, Kavanagh and Subramanian, 2006; Agius, 1990). The Maltese public primary health care system swiftly adapted to such circumstances by establishing the first Telemedicine Centre to support and manage patients with COVID-19 infection while under quarantine in the community (Primary Health Care, 2021).

A team of local general practitioners, called the 'Primary HealthCare Community COVID-19 Initial Assessment team' (PHC-CCIAT), performed the initial medical assessment and clinical decisions for all newly diagnosed community patients (Primary Health Care, 2021). Timely care was provided locally throughout the COVID-19 pandemic (Cassar *et al.*, 2021). Psychological antecedents of vaccination were used to facilitate risk assessment, diagnosis and evaluation of primary care patients with COVID-19 infection in the community (Betsch *et al.*, 2018).

There is limited literature concerning COVID-19 vaccination hesitancy on selectively suburban populations in island communities. The aim of the study was to assess COVID-19 vaccination hesitancy amongst COVID-19-positive patients in a Maltese suburban population. The objectives of the analysis include assessing the attitude of patients towards COVID-19 vaccination together with the actual uptake of the vaccine, providing information to facilitate the planning of vaccination campaigns and to inform the vaccine strategy.

METHOD

A quantitative, retrospective, descriptive, cross-sectional study was conducted by using a telephone survey. Data was obtained from the Access Database developed by the Primary HealthCare Department and used by the PHC-CCIAT. The form was developed for clinical purposes to assess COVID-19 positive patients in the community. An intermediary was used to fully anonymise the data. The current study included a purposive sample of 700 COVID-positive patients between July and September 2021. The inclusion criteria included those patients above 16 years of age, those who had tested positive for COVID-19 infection and only those who were being managed in suburban communities in the Maltese islands. The exclusion criteria included those subjects who were too sick to participate, those with no contact telephone numbers or those who did not reply, tourists and those residing in hotels/boats or elderly homes.

Patients' places of residence were documented. The definition of suburban areas relied on the categorization made by local experts as per the European Urban Health Indicator System project. The northern regions of Malta are characterized by suburban landscaping and agricultural activities (Agius, 1990). The suburban regions in Malta included those localities that are not situated near the harbour area (Patterson *et al.*, 2017).

The innovative 5C scale (Constraints/Confidence/Collective responsibility/Complacency/Calculation) was validated for field settings and regular international evaluation of important antecedents of vaccination. Varied factors were found to explain vaccination behaviour including constraints (structural and psychological barriers), confidence (attitudes towards vaccination), characteristics affecting collective responsibility (willingness to protect others), complacency (not perceiving illness as high risk) and calculation (engagement in extensive information searching). The 5C scale was applied to the unvaccinated and the partially vaccinated patient populations. In the current study, this 5C novel tool helped to facilitate diagnosis, address vaccine hesitancy and potentially, increase vaccine uptake. (Betsch *et al.*, 2018).

Data was analysed to extract the socio-demographics and vaccination attitudes of all these patients. Statistical analysis was performed using the Statistical Package for the Social Sciences v27 (IBM International; <http://www.spss.com>).

Ethics approval

Permission was sought from the Data Protection Officer of the Primary HealthCare Department. The study received ethics approval from the University of Malta on 7th March 2022 (reference number: MED-2021-00052).

RESULTS

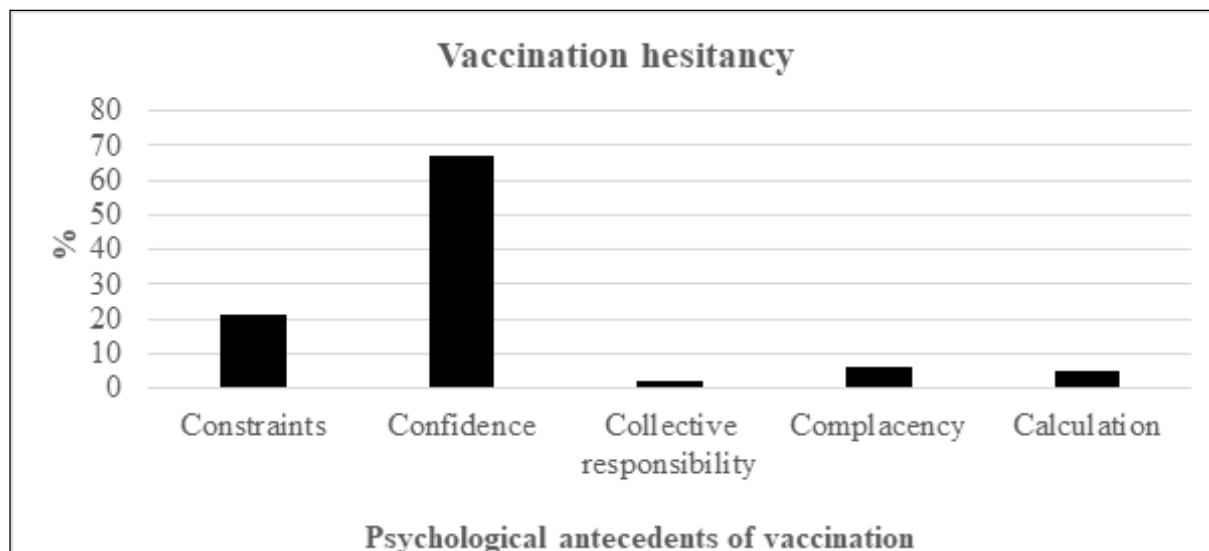
There were slightly more male respondents than female ones. Most respondents had higher levels of education and good social support. Almost one-fifth of participants were unvaccinated or partially vaccinated (Table 1). The sample population had an age distribution of 16–90 years with a mean of 45±18 years.

Table 1: Sociodemographic characteristics of participants (n=755)

Characteristic	n (%)
Gender	
Male	393 (52)
Female	360 (48)
Educational Level	
Primary	32 (8)
Secondary	191 (47)
Tertiary	187 (46)
Self-reported Perceived Social Support	
Good	616 (89)
Lives alone	63 (9)
Lacking	10 (1)
Patient reliable to call back (as assessed by the trained primary care doctor)	
Yes	690 (90)
No	73 (10)
Place of recovery	
Community	682 (98)
Hospital	15 (2)
Vaccination status	
Full	562 (81)
None	124 (18)
Partial	11 (2)
Intention to get vaccine	
Refuse	25 (22)
Hesitant	53 (46)
Willing	36 (32)

The most common psychological underpinnings of vaccine hesitancy were confidence (n = 67) and constraints (n = 21). This was followed by complacency (n = 6) and calculation (n = 5). Collective responsibility (n = 2) was the least frequent psychological antecedent of vaccination (Table 2).

Table 2: Psychological antecedents of vaccination hesitancy



DISCUSSION

Women and men exhibit diverse health-seeking behaviours (Wong *et al.*, 2010; Pullicino *et al.*, 2015; Pullicino *et al.*, 2018). In the current study, there were slightly more male respondents than female ones. Males might have responded to medical care because they tend to have higher severity rates from COVID infection (Gebhard *et al.*, 2022; Mukherjee and Pahan, 2021; Arslani *et al.*, 2022). This might imply a difference between seeking health care services and actually requiring them (Oberoi *et al.*, 2016). The fact that there were slightly more males than females seeking care in the current study might imply that SARS-CoV-2 affects males more adversely than females.

A Chile-based cross-sectional study using an online questionnaire showed that almost one-half of patients were willing to take the vaccine (Cerdeja and Garcia, 2021). Similarly, a cross-sectional study conducted in outpatient clinics in Turkey demonstrated that 60.5% were considering getting vaccinated (Sayaca *et al.*, 2022). Conversely, in this local study, participants were less willing to be inoculated (32%). Diverse participants' selection criteria, contexts and methodologies might explain this difference.

This study showed that suburban patients have different beliefs regarding vaccine hesitancy. Similar to the current study, cross-sectional studies conducted in Turkey and Chile showed

that most vaccine-hesitant patients experienced confidence issues (Sayaca *et al.*, 2022; Cerda and Garcia, 2021). Online and offline presence of anti-vaxxers might have affected confidence or the person's trust in the vaccine's safety profile and efficacy (Romer and Jamieson, 2020). Specific, finely tuned, differentiated information that can be fit for purpose can be collected and disseminated to diverse target audiences particularly for the anti-vaccine and undecided cohorts (Rawaf *et al.*, 2020; Cerda and Garcia, 2021; Government of Malta, 2022, Sayaca *et al.*, 2022).

Homebound patients might have experienced constraints issues or challenges to access the vaccine in a timely manner during a period of permacrisis. Local telemedicine doctors referred homebound service users for vaccination to be administered at their home (Primary Health Care, 2022). Healthcare professionals need to continuously hone their skills to tackle the challenges experienced by vulnerable populations in suburban regions. Furthermore, the healthcare system might strengthen its information infrastructure to inform marginalized or underserved patients when and how to contact primary care (Rawaf *et al.*, 2020; Chang *et al.*, 2021).

Creative, innovative ways of communication with various stakeholders might help to address confidence and constraints barriers (Rawaf *et*

al., 2020; Cerda and Garcia, 2021). In several countries, the initiatives and vision of local healthcare professionals led to the strengthening of telemedicine services including the introduction or expansion of the use of telephone, e-mail and virtual consultations. Furthermore, triaging was introduced to separate 'suspected' COVID-19 from non-COVID-19 care including routine/emergency vaccination appointments (Rawaf *et al.*, 2020; Primary Health Care, 2022).

Only a minority of patients expressed the willingness to protect others from infection through their own vaccination. Vaccine-hesitant individuals might not value or feel the need for collective responsibility, despite several and repeated appeals in the local media to protect the most vulnerable (Government of Malta, 2022).

Limitations

Due to time and resource constraints, this study did not capture vaccine hesitancy amongst those residing in elderly homes, hotels or on boats. The views of patients who were too unwell or not in Malta/Gozo were excluded as well. The validated 5C scale only assessed concurrent validity and not predictive validity (Betsch *et al.*, 2018). Respondents' recall bias, 'halo effect' and 'Hawthorne effect' could have occurred (Pullicino *et al.*, 2015). Further research can address these limitations and can also assess vaccine hesitancy amongst a larger sample population size.

Recommendations

The pandemic presented essential lessons to strengthen and support health care systems through better links between public health, primary health care, and secondary care to lead to better preparedness in future pandemic waves (Rawaf *et al.*, 2020; Chang *et al.*, 2021). At primary care level, different recommendations were identified to target vaccine hesitancy. These include:

- Incorporating the patient's beliefs in the management to manage patients effectively;
- Discussing vaccine strengths with the patient in a proper, timely manner to enhance confidence in the vaccine;

- Allowing time during the consultation to tackle psychological barriers;
- Outlining the benefits of the vaccine to boost vaccine uptake and relieve the burden on the secondary care hospital;
- Using the likelihood of the underlying reasons for vaccine hesitancy to plan advice during the consultation process;
- Coordinating with public health specialists whilst discussing the rationale behind vaccine hesitancy to plan vaccine campaigns;
- Using the highly prevalent reasons for vaccination hesitancy, that is confidence and constraints, to inform vaccine strategy;
- Liaising with policy makers and educators to increase vaccine uptake;
- Providing data to researchers to improve patient outcomes.

It is crucial that hard-won relevant lessons are retained to improve patient outcomes and equity in suburban patient populations (Rawaf *et al.*, 2020, Chang *et al.*, 2021). Evaluating the rationale behind vaccine hesitancy allows the identification of essential trend developments over time and the designing and evaluation of strategies to tackle vaccine hesitancy and enhance vaccine uptake (Betsch *et al.*, 2018).

CONCLUSIONS

In summary, the findings of this study highlighted the underlying barriers for vaccine uptake in suburban communities, particularly confidence coupled with structural and psychological barriers or constraints. This study provides essential information for healthcare professionals, researchers, educators and policymakers to guide resource allocation and to develop area-targeted public health interventions to tackle vaccination hesitancy amongst suburban residents to curtail its consequences.

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Pneumococcal vaccination in community homes for the elderly: a Maltese perspective

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ABSTRACT

Background

Pneumonia is a leading cause of morbidity and mortality worldwide. Vulnerable individuals, such as the geriatric population, are at an increased risk. *Streptococcus pneumoniae* is the most common cause of bacterial pneumonia. Pneumococcal vaccines offer protection against both invasive disease and pneumonia caused by this pathogen. The Centers for Disease Control and Prevention recommends that all adults over the age of 65 years should be vaccinated.

Objective

To gather local data from a community home in Malta about the percentage of residents aged ≥ 65 years vaccinated against *Streptococcus pneumoniae*.

Method

Questionnaires were distributed to residents at Mtarfa home (and/or relatives in cases of cognitive impairment) to determine whether they were ever recommended the vaccine and whether they took it.

Results

Out of a total of 65 completed questionnaires, only 12.3% had heard about the vaccine and only 7.7% took it. All vaccinated residents were female, and all had a chronic lung pathology.

Conclusion

Pneumococcal vaccine awareness and uptake were very low. This is probably multifactorial. Doctors should be made aware of the different formulations of pneumococcal vaccines available and promote their use when warranted. In October 2024, the national immunization program expanded pneumococcal vaccination to include the elderly. Adults aged 65+ are now eligible to receive the 20-valent conjugate vaccine (PCV20), as opposed to the 10-valent vaccine (PCV10) used for routine immunisation in infants.

Key words

Elderly population, pneumococcal vaccine, pneumonia, *Streptococcus pneumoniae*, vaccine.

INTRODUCTION

Background

Pneumonia is a common cause of morbidity and mortality, especially in the geriatric population. Six percent of all treatable causes of mortality in the European Union are due to pneumonia (OECD and European Union, 2022). The majority of bacterial pneumonias are caused by *Streptococcus pneumoniae* (Dion and Ashurst, 2023). This pathogen can cause local infections such as pneumonia, sinusitis and otitis media. More virulent strains can cause invasive infections including bacteraemia, bacteraemic

pneumonia, meningitis and osteomyelitis. Such invasive infections carry a higher mortality rate.

Thirty-one confirmed cases of invasive pneumococcal disease (IPD) were registered in Malta during 2018 (European Centre for Disease Prevention and Control, 2020). This corresponds to a rate of 6.5 cases per 100 000 population. This rate is not evenly distributed among the general population. The major impact of this disease is among the paediatric and geriatric populations, with males being more susceptible than females. Clinical risk groups include individuals with various chronic conditions including cardiovascular, neurological, respiratory, hepatobiliary, diabetes, chronic kidney disease (stages 4 and 5) and immunosuppression (due to disease or treatment) (Djennad et al., 2018). Other risk factors include previous pneumonia.

Pneumococcal vaccines protect against both local and invasive infections caused by the more common serotypes of this pathogen. The CDC (Centers for Disease Control and Prevention) recommends pneumococcal vaccination for all adults aged 65 years or older. Most European states also have national recommendations for pneumococcal vaccination in this age group. Pneumococcal vaccination uptake in the USA reaches approximately sixty-three percent, with uptake being much higher than in Europe where between twenty to thirty percent of the elderly population is vaccinated (Patterson et al., 2016). A previous article published in this journal sheds light on whether geriatricians and general practitioners in Malta recommend the pneumococcal vaccine to their patients. Ninety-four percent of doctors (out of forty-seven responses) claimed that they do so and seventy-nine percent of these doctors were familiar with the pneumococcal vaccine guidelines (Zerafa et al., 2020).

This study investigates the uptake of pneumococcal vaccine in a community elderly home prior to the introduction of this vaccine for elderly people in a national immunisation programme.

Objective

The aim of this study is to determine the percentage of elderly residents at Mtarfa home who were recommended the vaccine, and the percentage of those residents who took the vaccine.

METHOD

Permission to perform this study was obtained from the Chief Executive Officer of Active Ageing and Community Care (AACC) and from the Data Protection Officer of AACC. All data was processed anonymously, and data was deleted when it was no longer required. Approval from a Health Research Ethics Committee was not deemed necessary.

Sixty-eight residents from Mtarfa home were included in this study. Residents under sixty-five years of age were excluded. Questionnaires were handed out in person to residents. In the case of residents with cognitive impairment these were given to their relatives during visiting hours. These questionnaires included the residents' demographics and a description about the pneumococcal vaccine. Two questions with both yes/no answers needed to be completed. The first question was whether the pneumococcal vaccine was ever recommended to them, and the second question was whether they ever took the vaccine. Residents' past medical history was then recorded, focusing on chronic lung diseases. The percentages of residents who had been recommended the vaccine and those who took the vaccine were calculated.

RESULTS

Sixty-eight questionnaires were completed between 7th and 19th February 2024. Three residents were excluded since they were younger than sixty-five years old, leaving sixty-five eligible questionnaires – forty-nine females and sixteen males, as seen in Table 1. Seven out of forty-nine (14.3%) females and one out of sixteen males (6.3%) had the vaccine recommended to them. Thus, in total, eight out of sixty-five (12.3%) residents had the vaccine recommended to them, as seen in Table 2.

Table 1: Total number of residents, and gender distribution.

Gender	Number of residents	Percentage
Male	16	24.6%
Female	49	75.4%
Total	65	100%

Table 2: Total number of residents who had the vaccine recommended to them.

Vaccine recommended to resident	Number of residents	Percentage
Yes	8	12.3%
No	57	87.7%

Only five out of sixty-five residents were vaccinated (7.7%) (Table 3). All vaccinated residents were female. Out of these five residents two of them had a diagnosis of chronic obstructive pulmonary disease, two of them had a diagnosis of asthma and one with bronchiectasis.

Table 3: Total number of residents who took the vaccine

Resident was vaccinated	Number of residents	Percentage
Yes	5	7.7%
No	60	92.3%

DISCUSSION

This study sheds light on the awareness of the pneumococcal vaccine amongst both health care professionals as well as elderly residents living in a long term care community.

Streptococcus pneumoniae (pneumococcus) is a gram-positive bacterium which commonly inhabits the nasopharynx of humans. It is a human pathogen, there are no other animal or insect vectors. Transmission from one infected person to another person occurs via aerosol, respiratory droplets or by direct contact with secretions (Weiser, Ferreira and Paton, 2018). As with many other respiratory pathogens, pneumococcal infections are more common in the winter months. The virulence of this pathogen is mainly determined by the presence of a polysaccharide capsular structure, which surrounds the cell wall. By 2020, one hundred different capsulated serotypes were identified (Scelfo et al., 2021). Various pneumococcal vaccines were developed based on those serotypes of common occurrence.

The results of our study show that only 12.3% of residents in Mtarfa home had the pneumococcal vaccine recommended to them, and only 7.7% actually took the vaccine. Awareness about influenza and covid-19 vaccines is good and the majority of residents are offered these vaccines annually. In contrast to findings in a previous article (Zerafa et. al., 2020), this study highlights the fact that pneumococcal vaccine awareness in the local geriatric population is low, with only a minority of doctors having recommended this vaccine.

Four pneumococcal vaccine formulations are available locally: PPSV 23, PCV 10, PCV 13 and PCV 20 (although PCV 13 will eventually be replaced by the PCV 20). The 23-valent polysaccharide vaccine (PPSV23, Pneumovax 23®) was licensed first in the United States in 1983. PPSV 23 is still available on the government formulary for hospital use. PPSV23 is not licensed for use in infants. The first pneumococcal conjugate vaccine (Prevenar 7®, PCV7) was licensed for

use also in the United States in 2000. It included purified capsular polysaccharide of seven serotypes of *Streptococcus pneumoniae*. In 2010, a 13-valent pneumococcal conjugate vaccine (PCV13, Prevnar 13®) was licensed and replaced the 7-valent vaccine. The PCV13 was recently replaced with PCV20 on the inpatient government formulary; it is restricted for use in paediatric patients (requiring consultant paediatrician endorsement), pre or post-splenectomy patients and in patients following bone marrow or stem cell transplants. The 10-valent pneumococcal conjugate vaccine (PCV10, Synflorix®) was first licensed in 2009. It was introduced in the national immunisation programme for infants in May 2020.

A recommendation by the local Advisory Committee on Immunisation Practice (ACIP) for the introduction of the 20-valent pneumococcal conjugate vaccine (PCV20, Prevenar 20® previously branded as Apexnar®) for people sixty-five years and older has been implemented under the national immunisation programme, coinciding with the seasonal flu vaccination campaign. This study emphasises the need for health care providers to promote this vaccine which is now available for the geriatric community. It is the duty of all healthcare professionals to be familiar with the pneumococcal vaccine recommendations and promote this vaccine when warranted. They should clearly explain to patients the effectiveness and safety of this vaccine, clearing any misconceptions and highlighting aspects such as that this is a non-live vaccine, the vaccine does not contain any preservatives and that pneumococcal vaccines have been around for more than twenty years.

Studies regarding the effectiveness and duration of immunity of the PCV13 compared with the PPSV 23, show that the former is superior. The PCV 13 showed no decline in immunity after 5 years, in individuals aged ≥ 65 years old. The PPSV 23 showed waning antibody titres as early as 2 years post vaccination. The PCV 13 showed a 75% effectiveness at preventing IPD and a 45% effectiveness against non-invasive pneumococcal pneumonia. The PPSV 23

showed 45% effectiveness against IPD, and 18% against non-invasive pneumococcal pneumonia (Djennad et al., 2018).

Relying on patients and relatives' knowledge about vaccination history is not entirely accurate. Some residents might have taken the vaccine without recollection of taking it. On the other hand, some residents may have not taken the vaccine and mistakenly thought that they did. This limitation could have been avoided with proper documentation, including an electronic database accessible to all doctors, to verify the vaccination history of their patients. This study only included residents at Mtarfa home. More research is needed to gather data about vaccination uptake in other community homes, and to compare this with people living in their own homes.

Despite the above limitations, it is still clear from this study that only a small percentage of the involved elderly population were informed about the vaccine and an even smaller population took it. Keeping in mind the findings of this study, more education is necessary regarding vaccination options. A vaccination history should be part of a comprehensive geriatric assessment and should be clearly documented. Increasing vaccination rates is a powerful tool at the disposal of health care professionals to improve overall public health within a community.

CONCLUSION

Only a very small percentage of residents living in Mtarfa home were vaccinated with the pneumococcal vaccine. This is understandable given the lack of awareness, as only 12.3% of residents had the vaccine recommended to them.

In October 2024, the national immunisation programme extended the programme for pneumococcal vaccination to the elderly population. This follows the introduction of such vaccination for infants in May 2020. The formulation available for 65+ age group is the 20 valent conjugated vaccine (PCV20) as opposed

to the 10-valent vaccine (PCV10) for routine immunisation in infants.

Increasing awareness, combined with the inclusion of the pneumococcal vaccine for the geriatric population within the national immunisation programme, will ensure that this vaccine is more readily accessible to our geriatric population.

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