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Family Medicine and the Specialist Register



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and the Specialist Register*

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Family Medicine and the Specialist Register

Prof. Pierre MALLIA

It has indeed been an honour to serve again as MCFD President for two consecutive terms. When one thinks that one has spent nine years in all as President of the College one cannot but think humbly about members who have entrusted you to do so and I hope that I have satisfied them somewhat in what we have achieved - things which were mentioned in other editorials. Today I wish to speak about an ongoing issue which started during my tenure but which remain unresolved, although we have given our recommendations to issue a change in the law. We have spoken about this issue during several AGMs and also in this editorial but it is worth explaining the issue again as the law become clearer as we go along.

When the MCFD was put on the specialist register on its inception it was a great win for family practice in Malta. This specialist status really matters, especially for those who have been qualifying through the Specialist Training Programme in Family Medicine, which indeed has a thorough summative assessment. However, during these past years it has become evident that, although we are registered as specialists with the Medical Council of Malta, the law keeps us separate from other specialties - even sub-specialties which some family doctors also do, such as Occupational Medicine and Palliative Care. All these specialties are listed in section 1c of the law which lists every speciality for which the Medical Council issues certificates and which have their European certificate. Family Doctors have been put in section 1d to conform with other European states. This is basically a GP-register. The UK have the same thing but they refer to it as a GP-register as in fact it is. The only difference is that in the UK GPs are not listed as a specialty and therefore the GMC does not

issue a certificate similar to ours. However the GMC *does* write on the specialist certification of other specialties, including Medicine and Surgery, that these latter are not allowed to practice as GPs or family doctors.

In fairness it has been recommended that we change the title of 1d to 'Specialist Family Doctors', rather than simply Family Doctors. I do however still have some reservation for this - at least until such time as we regulate general practice in the community. Doctors are still given a licence to be a 'medical practitioner' - which leave the practice of family medicine/general practice in a vague area when it comes to private practice. It is only in health centres and the MAM agreement imposes that recruits have to be on the Specialist Register. This is not so however for private practice, and any doctors with a licence continue to be allowed to practice. As we all know, in this day and age this is an issue about patients' rights. Once Family Medicine has become a speciality and across Europe one has to do some form of vocational training, then going out on one's own immediately can lead to dangerous practice. There is a difference between the organisation of courses today and those of twenty years ago, when courses used to aim the MD degree towards general practice. Family Medicine does not remain any longer a by-default work if one does not specialize in another area. The solution is to combine 1d into 1c and for the medical council to issue licences only to this category and prohibit people from working as family doctors or general practitioners privately without being on the register. This would also control the entry of foreign doctors into Malta; especially those who would work with a private hospital as a Family Doctor. If not what would be the point of being on the Specialist Register?

THE TRANSFORM PROJECT

On the other hand, whilst still President I was approached by Gabriella Calleja on behalf of the TRANSFORM EU project asking whether the college would like to partner in order to organise CME on how to treat people who are transsexual. These people may have different treatment modalities since they may be on hormones or other medication. Some may also need psychological support. GPs, as the primary contact need to know about these conditions. The project involves bringing GPs from the UK to give CME to College members. We will also include a new module in the existing curriculum for vocational training in this regard. The council had approved this and we are in the process of starting the project. The President asked me to be the MCFD's representative and council will be coordinating with the CME team to bring these activities to fruition.

THE STPFM CURRICULUM

I will continue to help the college as I can. The new President has asked me to continue editing the journal (JMCFD). This I am honoured to do: however I must thank the team including Drs Mario Sammut, Anton Bugeja and Glorianne Pullicino who do the major part of the work.

In the JMCFD the fruit of the STPFM is evident from the studies we have been publishing. Gone are the days when we craved for such studies to be done by our doctors. The studies from health centres are an invaluable source of information for doctors, authorities and to assess and audit the system.

The first article is an analysis of referral to social services in state primary care in Malta. The majority of patients referred are over 65 and one has to wait around 18 days on average, as the authors find. This 18 day wait period is difficult to interpret – whether it is a relatively short period of time considering the load of patients, or whether in point of fact it is too long compared to the service provided by the General Practitioners/Family Doctors themselves, who see patients immediately. One hopes that this system can be improved once centres such as the Paola hub to be built start operating.

The second study evaluates the use of nasal bone imaging in primary care in Malta. Indeed it highlights the limits of such x-rays as very few of those referred to ENT had fractures considering the 'substantial' number taken. Such study ought to spur revision of protocols, even considering the ethics of radiation exposure. With standards of care there will be no issue with malpractice or negligence; probably referral to ENT is mostly done anyway.

Finally a study on depression in Type 2 Diabetes in our primary care system illustrates the importance of screening for depression, which is more common than thought in these patients. Considering the importance mental health is taking on in primary care system worldwide, mental health care seems to be somewhat deficient internationally in general practice as the field has shifted to specialists. Conversely GPs are the first to see patients with mental health issues – they are indeed the primary contact for probably most cases in this regard – and it seems that patients not only prefer to be treated by their GPs but that it is becoming a myth to think that GPs can only treat minor to moderate depression¹.

Finally the new MCFD president asked me to continue to coordinate the revision of the curriculum. So I will not be taking that rest after all. I have made a list of topics which need revision and those interested in reviewing a module may contact me. There will be a remuneration from council.

Finally I wish to thank all for the great experience over the past six years. In total I have spend nine years serving the college and I hope that this was useful to many. When those of us who worked for the MRCGP(INT) see people graduating from the Specialist Training Programme (STPFM) and slowly increasing in their percentage as MCFD members, one feels the pride that family medicine in Malta is taking on more quality and prestige.

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¹ Puschner, B. et al. "The epidemiology, burden, and treatment of mental disorders in primary care", in Andre F. Varvalho and Roger S. McIntyre (eds), *Mental Disorder in Primary Care. A guide to their evaluation and management*, Oxford University Press, UK, 2017, pp. 1-20.

An analysis of referrals to social services in state primary care in Malta

Dr Elizabeth MICALLEF, Dr James MIFSUD and Dr Alexandra SCERRI HARNEY

ABSTRACT

Background

Involvement of the social worker in patient management leads to better holistic care. A better understanding of the service offered is needed.

Objectives

The aim is to review the referrals made to the social worker in Primary HealthCare in Malta since the introduction of the service. Other objectives include increasing the awareness of this service, and improving community care.

Method

A retrospective analysis of the data obtained by the social worker was carried out by examining all the referrals to the social worker between the 17th August 2015 and the 30th September 2018. Data collection included the total number of referrals, age, nationality, locality, source of referral, time from referral to first contact, reason for referral and co-morbidities.

Results

The majority of subjects (n=52) were 65 years or older. There were 56.4%, 16.8% and 25.7% of cases from the North, Central and South catchment areas respectively. The majority of patients (n=69) were referred by GPs (67.6%). The others were referred by other healthcare professionals or they were self-referred. The average waiting time from the date of referral to the initial contact with the social worker was 18

days. Most referrals were due to social problems (52%) whilst 38 clients (37%) suffered from mental health illness and 37 clients (36%) suffered from cardiac diseases mainly hypertension and ischaemic heart disease.

Conclusion

Recommendations for increasing awareness which will lead to better community care were put forward in the discussion, including implications for policy making and making good use of the service.

Keywords

Social work, general practice, general practitioners, primary care, holistic health

INTRODUCTION

The social work profession aims to “promote or restore a mutually beneficial interaction between individuals as well as between individuals and society in order to improve the quality of life, by aiding persons in receipt of such services to understand, resolve and prevent personal, interpersonal, family or social problems” (Social Work Profession Act, 2003). The International Federation of Social Work favours the WHO principles as they closely relate primary health care (PHC) and ‘population health’ by addressing the social determinants of health, which include the unjust inequalities in global health as a result of social, environmental, political and economic factors (International Federation of Social Workers (IFSW), 2008).

The introduction of the social worker at the level of PHC in Malta started in August 2015 (Ministry of Health, 2019a). This was set up because many general practitioners (GPs) were unaware how they can be of help to patients, when faced with several social circumstances during a consultation. In primary care, it is not only the GP who encounters difficult social situations, but also other healthcare professionals (HCPs) such as nurses, occupational therapists, podologists and speech therapists. From the 15th of December 2015, referrals to the social worker were accepted from any HCP working within the PHC. Referrals to the social Worker are made using the typical referral ticket (Mater Dei Hospital (MDH), 2011).

Provision of service

To date, there is only one social worker providing this service in PHC. Initial appointments take place in Cospicua or in Birkirkara Health Centre. Patients residing in Mosta, Birkirkara, Rabat and Gzira catchment areas are referred to Birkirkara Health Centre and those from Cospicua, Paola, Floriana and Qormi catchment area to Cospicua Health Centre. This is an optional service and therefore patients need to accept referral to the social worker clinic. Home visits are available depending on the needs of the client. 'There's a growing shift towards providing care in people's homes and new intensive care roles, rather than residential care' (Batty, 2004). It is of paramount importance that social workers and GPs work hand in hand for better patient management.

It should be noted that the service offered at Social Worker's Office situated in Qormi Health Centre was not taken into consideration in this study. The social workers there are employed by Social Services and not by PHC.

Objectives

The aim of this study is to review the referrals made to the social worker in health centres in Malta since the introduction of the service. Other objectives include increasing the awareness of the service available in PHC and to improve community care.

METHOD

A retrospective analysis was carried out by examining all the referrals to the social worker between the 17th August 2015 and the 30th September 2018. All referrals from all the health centres in Malta were included. In this study, referrals from Victoria Health Centre were excluded. Data were obtained from the database held by the social worker herself. Data was given without any traceability; no identification of patients was possible. Data collection included the total number of referrals, age, nationality, locality, source of referral, time from referral to first contact, reason for referral and comorbidities either from what the GP had listed or else from the case assessment performed by the social worker. These were further subdivided into sections for better data analysis. These sections included domestic violence, learning disability, mental health and addiction, physical disability, relationship/family problems and social support. Comorbidities were divided into cardiac, mental health and endocrine.

This study was approved by the Department of PHC and also by the Data Protection Officer in the Department. Ethical approval was not needed for this audit, as patients' details were not identifiable. Confidentiality was ensured.

The data was inputted and analysed using Microsoft Excel 2007.

RESULTS

The total number of referrals was 102. Around 95% of patients were Maltese. Other participants came from Ethiopia, Ivory Coast, Somalia, Sweden and Tunisia. The majority of subjects (n=52) were 65 years or older (Figure 1).

There were 56.4% (n=57), 16.8% (n = 17) and 25.7% (n=26) of cases from the North catchment area, Central catchment area and South catchment area respectively (Figure 2). Overall the Birkirkara area was the one from which most referrals originated (n=37) (Figure 3).

The majority of referrals (n=69) were done by GPs (67.6%). The others were referred by clinicians attending the Adult Down Syndrome clinic (14.7%), Mental Health Clinics (2.9%), and other clinics (11.8%) as shown in Table 1. These included the Diabetes Clinic, Ophthalmic Clinic,

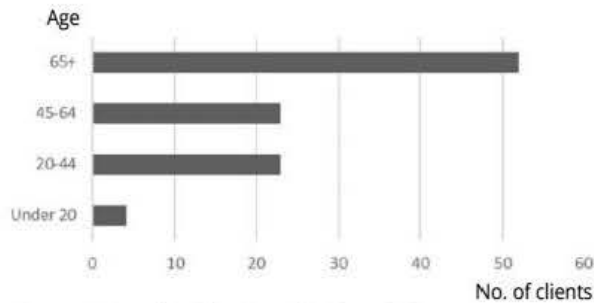


Figure 1: Age distribution of referred clients

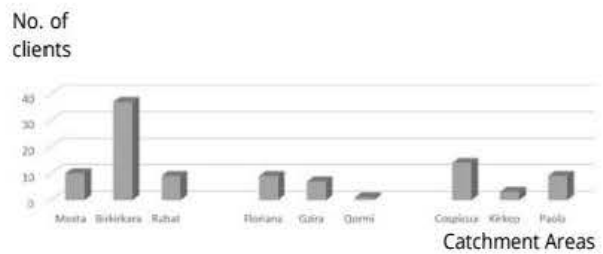


Figure 3: Referrals by different health centres

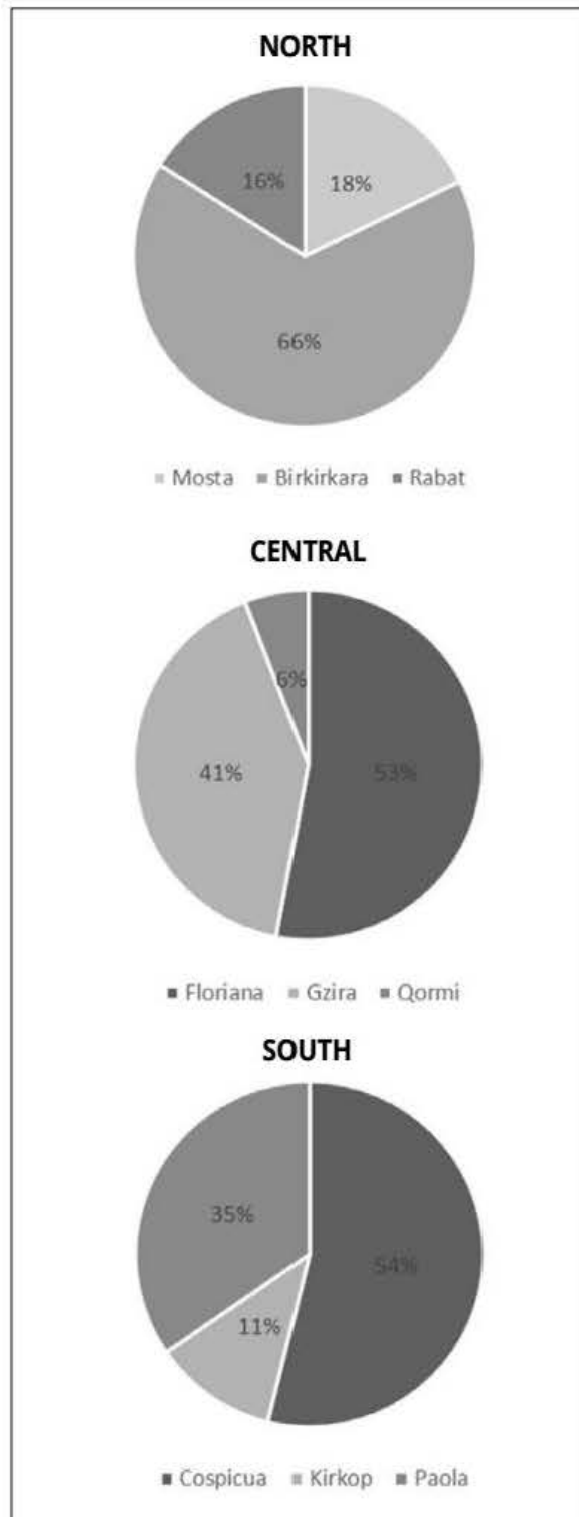


Figure 2: Referrals by catchment area and further subdivided by health centre

Physiotherapy Clinic, Prescription Clinic, Speech and Language Clinic, Treatment Room and Lifestyle Clinic. Interestingly, 2.9% of cases were self-referred.

The average waiting time from the date of referral to initial contact with the social worker was 18 days (range: 0-171).

Reasons for referral were further divided into categories shown in Table 2. Most referrals were due to social support problems (52%). Social support included people living on their own and primary care givers in need of additional support for the people they are taking care of, including physical disability and dementia. Also included were those clients who needed financial assistance and housing. About 15.7% of the referrals (16 referrals) were made in view of either mental health problems or addictions. Others are listed in Table 2.

This study showed that 38 clients (37%) suffered from mental health illness, mainly depression and anxiety whilst 36% (37 referrals) of those referred to the social worker suffered from cardiac diseases mainly hypertension (HT) and ischaemic heart disease (IHD). The third most common comorbidity in these clients was illnesses related to Diabetes Mellitus Type 2 (Figure 4).

Source of referral	No. of referrals
General Practitioners	69
Mental Clinics	3
Adult Down Syndrome Clinics	15
Other Clinics	12
Self-Referred	3

Table 1: Source of referral

Reason for referral	Number of referrals
Social support (including financial problems)	53
Mental health + addiction	16
Learning disability	15
Physical disability	8
Domestic violence	7
Relationship/family problems	3

Table 2: Reason for referral

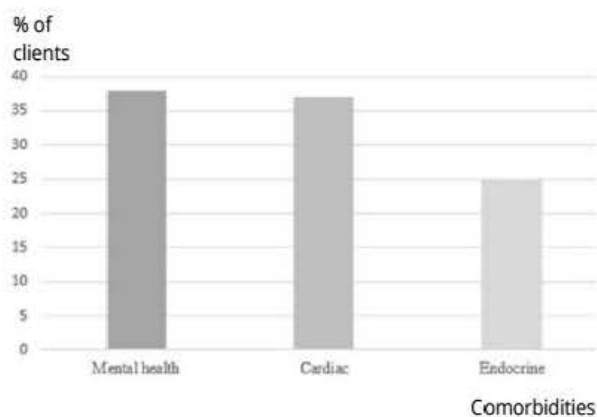


Figure 4: Comorbidities present

DISCUSSION

Analysing the referrals, one can see that referrals to the social worker from the non-Maltese population was small compared to what was expected, considering the large number of migrants (National Statistics Office, 2014). These people might be benefitting from good projects that are already set up by LEAP (Ministry of Social Welfare, 2019a). The LEAP Project, which was set up in 2013, aims to 'combat social exclusion and poverty through employment, capacity building, social integration and social mobility' (LEAP's mission statement) (Ministry of Social Welfare, 2019a). It was founded to provide opportunities for employment for vulnerable groups such as single mothers, ex-offenders and also migrants. Another reason for the low turnout of non-Maltese is that they might experience a language barrier when attending health centres resulting in suboptimal consultations or else lack of awareness that such services exist. This patient population might be experiencing unmet needs or demands.

Good communication is the basis of good quality medical care. The language preferences of patients should be noted and interpreter services provided to facilitate the consultation process. A patient-centred approach that must be taken in consultations involves gathering information using the ICE framework – Ideas; Concerns; and Expectations (Silverman and Kinnersley, 2012). This approach will not be properly adhered to if a language barrier is present and thus social problems may go unnoticed. Other probable reasons for low turnout of migrants may be either the lack of awareness of the social worker service within health centres or else because they are already making use of other services offered by the Jesuit Refugee Service in Malta. The aim of this organisation is 'to assist with immediate needs while encouraging and enabling the longer term goal of self-sufficiency' by helping them psychosocially and also legally (Jesuit Refugee Services, 2019).

The majority of patients resided in Birkirkara (37 referrals). This was followed by Cospicua (14 referrals). This might have occurred because the social worker clinics are situated in these localities, making them more accessible to these residents. Moreover, the GPs and allied HCPs might be more aware of the service being provided. The HSE Health Inequalities Framework 2010-2012 recognises that 'the health of individuals, groups and communities is affected not only by the level of health and social-care services provision, but equally by the degree of access to them' (Health Service Executive, 2008).

There might be other reasons for this observation. People with lower socioeconomic status generally live in areas with poorer quality housing. This is evidenced by the Census of Population and Housing 2011 issued by National Statistics Office (National Statistics Office, 2014) whereby people living in the Southern Harbour district have the highest illiteracy rates (National Statistics Office, 2014, p.146), the lowest tertiary education rates (National Statistics Office, 2014, p.158), and the highest unemployment rates (National Statistics Office, 2014, p.165). Additionally, this district had the cheapest rent (National Statistics Office, 2014, p.258) and the worst state of dwellings, indicating poorer quality

housing. This may subsequently give rise to an increased risk of contracting specific diseases and may even affect mental health (An, et al., 2016). One would assume that in these areas, social requirements would be the highest.

However, our present study does not support this. This might have occurred because in the current study, only the public service was analysed. It could be that clients in that area prefer using the private service or else they are making use of other social support services available such as Haven (Ministry of Health, 2019b) in Paola. This can be explained by the presence of a LEAP centre in Birgu (Ministry of Social Welfare, 2019a). Furthermore, people from this district might not even feel the need to attend the health centre at all. As Fuchs (1978) states, education may lead to positive social, psychological and economical skills and positive attitudes about health access to preventative health centres. Due to low education attainments in this district as shown in the Census of Population and Housing (2011), this could also explain the low turnout (National Statistics Office, 2014, p.161). Considering that many non-Maltese reside in Bugibba, only 6 referrals were brought forward (NSO, 2014). This can also be attributed to another LEAP centre in Bugibba (Ministry of Social Welfare, 2019a).

One needs to be aware of another service situated in Qormi Health Centre as mentioned in the introduction. This service was not included in this study as the social workers are not employed by the PHC department and referrals are made solely by psychiatrists. The service offered focuses mainly on psycho-social issues of those at high risk of mental health disorders (Ministry of Social Welfare, 2019b). In this study, one can note that the turnout from Qormi was very low. One can stipulate that having a mental health clinic in Qormi with subsequent referral to this service (Qormi Social Service) would result in less people consulting the GP about mental health issues and hence less referrals to social workers employed by the PHC department.

People of lower social classes were found to have increased prevalence rates of coronary heart diseases with higher associated mortality rates than those of higher social classes because

of raised prevalence of risk factors including smoking, high blood pressure, obesity, increased blood glucose and elevated cholesterol (Rose and Marmot, 1981). Furthermore, socioeconomic status had a greater impact on cardiovascular morbidity when compared to other risk factors including hyperlipidaemia, hypertension and smoking (Pincus, et al., 1998). In addition, people in lower social classes were found to have higher blood pressures, impaired glucose tolerance, smoked more and exercised less (Rose and Marmot, 1981). Similarly, in this study, around one-third of patients referred to the social worker suffered from cardiac diseases. Therefore, the role of the social worker is essential as the social problems might be masked by the plethora of physical complaints. By tackling social challenges, the risk of disease might be lowered. Awareness of such service would help GPs to identify vulnerable cases and refer appropriately.

The United Nations state 'the inevitable increase in the share of older persons that results from the decline in fertility and improvement in survival that characterize the demographic transition— is occurring throughout the world' (United Nations, Department of Economic and Social Affairs, Population Division, 2017). Therefore, this might explain why 52% of the referrals were made for people aged 65 or more. With regards to the population of the Maltese Islands attending health centres, Baldacchino, et al., (2017) found that there was a 'highly significant correlation ($p < 0.001$) between increasing age and number of comorbidities' and also noted that elderly patients tend to bring up more issues during a consultation process. Therefore, from this study discussed by Baldacchino, et al., (2017), one can conclude that more elderly patients attending the health centre (due to the phenomenon of ageing population (United Nations, Department of Economic and Social Affairs, Population Division, 2017)) are more likely to have chronic conditions and accompanying co-morbidities. This is associated with increased social needs and adjustments and so the need of the social worker on board is highly evaluated. An American (lower Manhattan) study showed that if social problems are not dealt with properly, they can increase the risk of physical diseases (Kellogg

and Brickner, 2000). Elderly who are homebound due to their comorbidities have higher disease burden associated with worse prognosis and limited functionality (Kellogg and Brickner, 2000). This might impact their mental health, and apart from the medico-social care offered to them, their psychological needs need to be addressed (Kellogg and Brickner, 2000). It is therefore useful to refer to the social worker earlier on, to involve the necessary health care professionals so as to improve patients' physical abilities and hence prevent or delay their becoming dependant through prior anticipation.

As stated by NICE, 80% of chronic illness and 90% of mental health problems are managed in primary care (National Collaborating Centre for Mental Health (Great Britain), National Institute for Health, Clinical Excellence (Great Britain), British Psychological Society and Royal College of Psychiatrists, 2011). In this study, most of the patients referred suffered mainly from mental health and endocrine illnesses. Many chronic illnesses such as diabetes mellitus, which can be physically disabling in the later stages, and mental health diseases, including dementia, will inevitably lead to social problems. Given that 15% of the referrals were due to mental health and addiction problems, and 37% of patients had a co-existing mental health disease, it shows the importance of managing mental illness and its associated comorbidities and how these affect patients.

Mental health prevalence has increased over the past few years internationally (Andrade, et al., 2013). People suffering from mental health illness might need primary care services, either because of a deterioration in view of psychosocial stressors or because of treatment compliance. Primary care is usually their first point of contact and therefore good liaison between the primary care physician and the social worker is important for better patient outcomes. Social worker led mental health services in patients' homes were found to significantly reduce symptoms of chronically ill depressed elderly, thereby improving their health status (Reckrey, et al., 2013). This continues to re-establish their importance in tackling mental health issues in the community. Furthermore, their role is

essential when assisting palliative patients, whose psychosocial needs need to be thoroughly addressed at end-of-life care (Reckrey, et al., 2014).

The current study showed that the waiting times were not long with a mean of 18 days. The implications of this can be twofold: on one hand this might imply that the service that is being offered is a good one, as the waiting time is short. However, on the other hand it might also imply that there is a lack of referrals, in-keeping with lack of awareness of the service provided. By delving into social struggles during a consultation, the time might increase but will eventually lead to a decrease in ineffective consultations, by exploring the hidden agenda (Silverman, 2005). Social problems might recur, leading to other presentations such as physical symptoms which might mask the original social problem.

Similar to the current study, a London-based study conducted in 1980, found that the majority of referrals came from GPs (67.6% versus 63.4%) (Corney and Bowen, 1980). The rest are from other HCPs, which is reflective of the impact these professionals have in primary care. This also validates the use of social services by other HCPs. It is paramount that social workers and GPs work hand in hand for better patient outcome. Ideally there is a continuous rapport between the two parties so that even after the referral is done, the social worker and the GP can re-discuss further, ensuring a holistic approach to health management. In 1968 the Seeböhm committee had stated that 'survey after survey has shown that many family doctors do not seek help from social workers nor use social services that are available: they often do not know about them, or do not understand or value them' (The Seeböhm Report, 1968). As a consequence, it led to analysis of the family doctors' perception of social worker involvement in primary care (Williams and Clare, 1979). Data in this study shows that the referrals to the social worker did not correlate with the age or experience of the GP. The majority of GPs also emphasized the importance of face-to face meetings with the social workers instead of just a ticket of referral (Mater Dei Hospital, 2011). Given the size of Malta, such informal discussions

might be more feasible and might result in better assessment and management of the situation in question. Also, such discussions should be held at more localities, and not solely in Birkirkara and Cospicua, where initial meetings occur. This might be made available when this service is led by more than one social worker.

Interestingly, the present study showed that domestic violence was not an infrequent reason for referral. It is known that people who have themselves been brought up in an environment of abuse, domestic violence, illicit substance use and mental health disease are "12 times more likely to have attempted suicide, 7 more times to be alcoholic and 10 times more likely to have injected street drugs" (Van Niel, et al., 2014). Hence, the role of the social worker is of utmost importance not only to tackle the issues of domestic violence, but also to rule out illicit substance use and mental health diseases in family members. An adequate support network must also be provided to prevent them from ending up victims of mental health disease or illicit substance use.

The GP can influence the social determinants of health by observing and asking about the patient's social status, financial and household problems and therefore facilitate referrals to the primary social worker as soon as possible. A study showed that more than 40% of patients reported that the GP was oblivious to the challenges the patients were facing (Iezzoni, et al., 2015). When identified, social struggles should be documented in the medical file at health centres, given that different doctors might encounter the patient, ensuring continuity of care due to the absence of patient registration. It is not merely our duty to the patient, but also towards achieving sustainability in health services. National Health Systems Strategies (NHSS) 2020 for Malta has stated that 'better use of the resources available to us' is needed 'to deliver the maximum benefit for our continued investment in the health sector' (Ministry for Energy and Health, 2014). Also mentioned in NHSS 2020, is the need to upgrade all settings providing health services (Ministry for Energy and Health, 2014). From this, one can conclude that there is an increasing need of social workers working

hand in hand with GPs from health centres to keep up with the increasing social demands our population requires and that the social worker in the primary care is a step forward in the right direction.

One must also discuss the impact of the service on the social worker. The questions which arise include whether the social worker can turn to another professional when the burden is too much to handle and whether the amount of referrals is overwhelming. A study conducted in 2016 investigated the effect of burnout on a group of social workers. Burnout is a very common recognised negative factor that affects performance in health care workers. The study showed that the longer their career is, the higher the risk of burnout. However, apart from the period worked, there are multiple factors which affect performance, including gender, marital status and personalities. Therefore, a support system must be developed in order to tailor the specific needs that are required by each social worker (Lachytová and Kalanin, 2016).

Strengths of this study

All referrals since the beginning of the service in 2015 were included in this study. The importance of recording comorbidities enabled the authors to analyse in-detail the reason for referral. Hence, this helped the identification of vulnerable groups and their needs which will enable to facilitate better and earlier referral in the future.

A comparison to the study carried out by Corney and Bowen, in London in 1980, helped identify that even though the majority of referrals are made by GPs, a significant number were made by other HCPs. This validates the extension of the service to other HCPs and increases the awareness of all HCPs.

Limitations of study

One limitation of the study was the subjective nature of the mode of classification of the referrals done. The social worker's classification was used rather than the ticket of referral. This was due to various reasons for referral, and that the presenting complaint could have been just the tip of the iceberg. Patients referred to the social work service have a multitude of

problems and this can lead to misinterpretation of data. For example, a wife whose husband (who is the family's bread winner) suffers from Alzheimer's Disease and is physically dependent will have a number of problems. She would require financial support, or practical help to take care of her husband. Due to time and resource constraints, each referral was put under one category but in reality there was more than one reason for the referral because of significant overlap in adherence with the LEAP statement. Furthermore, the total number of GPs who referred to such service is unknown. The referrals could have been from the same GP or from different ones. Subsequently one cannot extrapolate any data on the awareness amongst GPs and HCPs.

Further implications

As stated by Volland (1996), 'People who seek medical treatment still need guidance beyond the actual identification and treatment of a medical problem' (Volland, 1996). This highlights the need of social workers in primary care, where patients repeatedly attend health centres steering away from their medical problem and give clues about poor social status. Doctors need to be more aware of these services in order to aid patients. A study by Matalon, et al. (2002) showed that GP satisfaction increased from 4 to 8 on a scale from 1-10 following intervention by the social worker (Matalon, et al., 2002).

Keeping in mind that the social determinants of health lead to more equitable health outcomes for everyone, training medical staff and other healthcare workers would be necessary (Canadian Medical Association, 2013). Such training will undoubtedly lead to more adequate referrals and will increase the pool of social workers in primary care, leading to better holistic community care addressing the biological, psychological and social aspects and this is in keeping with the vision proposed by NHSS 2020.

CONCLUSION

In this study, all referrals made to the social worker since the introduction of the service in Malta were analysed. Traits in patients' demographics and co-morbidities present were

noted and their effect on the biopsychosocial well-being was studied with respect to the need for social worker input in their holistic care. Certain trends with regards to the geographical residency of the patient and how they influence referral to this service were also noted.

The authors propose an amendment to the normal ticket of referral whereby the referrer can tick the option, making the referral system more standardised. An electronic ticket of referral will eliminate misplaced or illegible referrals. This will also facilitate the job of the social worker and help to guide her in the right direction to better tackle the issues being presented to her. As mentioned in the discussion, continuous rapport between the GP and the social worker is essential, after initial assessment by the social worker.

A repeat analysis of the service after certain policies are set in place (increasing awareness, abiding by NHSS 2020 by increasing the pool social workers), will be of benefit to all GPs. One should also include Gozo in the next analysis and whether their social needs differ. Furthermore, more statistics regarding the Qormi Social worker office will be of assistance to the primary care sector and shed light on the impact the service has on the community.

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REFERENCES

- An, K., Salyer, J., Brown, R.E., Kao, H.F.S., Starkweather, A. and Shim, I., 2016. Salivary biomarkers of chronic psychosocial stress and CVD risks: a systematic review. *Biological research for nursing*, 18(3), pp.241-263.
- Andrade, L., Caraveo-Anduaga, J.J., Berglund, P., Bijl, R., Kessler, R.C., Demler, O., Walters, E., Offord, D. and Wittchen, H.U., 2013. Cross-national comparisons of the prevalences and correlates of mental disorders. *Bulletin of the World Health Organization*, 78, pp. 413-425.
- Baldacchino, M., Abela, J., Reiff, E.M., Grima, J., Attard, L. and Ellul, R., 2017. Patient attendance at a primary health care centre in Malta: a cross-sectional observational study. *Journal of the Malta College of Family Doctors*, 6(3): 25-30.
- Batty, D., 2004 (Sep 29). Society Live: Why do we care? The introduction of training qualifications and the multidisciplinary skills now required in social care work have put the profession on a par with nursing and teaching. David Batty looks at the changing role of the social care worker: Social care. *The Guardian*, 4. ISSN 02613077.
- Canadian Medical Association, 2013. Health equity and the social determinants of health: A role for the medical profession. Ottawa: *Canadian Medical Association* [online] Available at: <<https://www.cma.ca/health-equity-and-social-determinants-health-role-medical-profession>> [Accessed 17 April 2019].
- Corney, R.H. and Bowen, B.A., 1980. Referrals to social workers: A comparative study of a local authority intake team with a general practice attachment scheme. *JR Coll Gen Pract*, 30(212), pp.139-147.
- Fuchs, V.R., 1978. Economics, health, and post-industrial society. *The ES Woodward Lectures in Economics, presented at the University of British Columbia, Nov*, pp.1-2.
- Health Service Executive, 2008. *Health Inequalities Framework 2010-2012*. Dublin: Health Service Executive.
- Iezzoni, L.I., Barreto, E.A., Wint, A.J., Hong, C.S. and Donelan, K., 2015. Development and preliminary testing of the health in community survey. *Journal of health care for the poor and underserved*, 26(1), pp.134-153.
- International Federation of Social Workers (IFSW), 2008. *Health*. [online] Available at: <<https://www.ifsw.org/health>> [Accessed 20 March 2019].
- Jesuit Refugee Services, 2019. *Jesuits in Malta*. [online] Available at: <<http://www.jrsmalta.org>> [Accessed 8 February 2019].
- Kellogg, F.R. and Brickner, P.W., 2000. Long Term Home Health Care for the Impoverished Frail Homebound Elder: A Twenty Seven Year Experience. *Journal of the American Geriatrics Society*, 48(8), pp.1002-1011.
- Lachytová, L. and Kalanin, P., 2016. Burnout as a selected aspect affecting the work performance of a social worker. *Journal of Vasil Stefanyk Precarpathian National University*, (3, no. 2-3), pp.50-57.
- Matalon, A., Nahmani, T., Rabin, S., Maoz, B. and Hart, J., 2002. A short-term intervention in a multidisciplinary referral clinic for primary care frequent attenders: description of the model, patient characteristics and their use of medical resources. *Family Practice*, 19(3), pp.251-256.
- Mater Dei Hospital (MDH), 2011. *Ticket of Referral*. [online] Available at: <https://deputyprimeminister.gov.mt/en/forms/Documents/ticket_of_referral.pdf> [Accessed 12 March 2019].
- Ministry for Energy and Health, 2014. A national health systems strategy for Malta 2014-2020. [pdf] Malta: Ministry for Energy and Health. [online] Available at: <<https://deputyprimeminister.gov.mt/en/Documents/National-Health-Strategies/NHSS-EN.pdf>> [Accessed 8 February 2019].
- Ministry of Health, 2019a. *Social Worker Service*. [online] Available at: <<https://deputyprimeminister.gov.mt/en/phc/Pages/Services/Social-Worker-Service/Social-Worker-Service.aspx>> [Accessed 8 February 2019].
- Ministry of Health, 2019b. *Mental health services*. [online] Available at: <<https://deputyprimeminister.gov.mt/en/phc/Pages/Services/Mental-Health-Services/Mental-Health-Services.aspx>> [Accessed 7 February 2019].
- Ministry of Social Welfare, 2019a. *LEAP: Anti-Poverty and Social Exclusion*. [online] Available at: <<https://fsws.gov.mt/en/leap/Pages/default.aspx>> [Accessed 8 February 2019].
- Ministry of Social Welfare, 2019b. *Qormi Health Centre*. [online] Available at: <<https://fsws.gov.mt/en/appogg/Pages/Health-and-Family-Services/Qormi-Health-Centre.aspx>> [Accessed 2 May 2019].
- National Collaborating Centre for Mental Health (Great Britain), National Institute for Health, Clinical Excellence (Great Britain), British Psychological Society and Royal College of Psychiatrists, 2011. Common mental health disorders: identification and pathways to care (Vol. 123). *RCPsych Publications*.
- National Statistics Office, 2014. *Census of Population and Housing 2011: Final Report*. [online] Available at: <https://nso.gov.mt/en/publications/Publications_by_Unit/Documents/01_Methodology_and_Research/Census2011_FinalReport.pdf> [Accessed 12 March 2019].
- Pincus, T., Esther, R, DeWalt, D.A. and Callahan, L.F., 1998. Social Conditions and Self-Management Are More Powerful Determinants of Health Than Access to Care. *Ann Intern Med*, pp.129:406-411. doi: 10.7326/0003-4819-129-5-199809010-00011
- Reckrey, J.M., DeCherrie, L.V., Kelley, A.S. and Ornstein, K., 2013. Health care utilization among homebound elders: does caregiver burden play a role? *Journal of aging and health*, 25(6), pp.1036-1049.
- Reckrey, J.M., Gettenberg, G., Ross, H., Kopke, V., Soriano, T. and Ornstein, K., 2014. The critical role of social workers in home-based primary care. *Social work in health care*, 53(4), pp.330-343.
- Rose, G. and Marmot, M.G., 1981. Social class and coronary heart disease. *Heart*, 45(1), pp.13-19.
- Silverman, J., 2005. Hidden agendas and how to uncover them. *Medicine*, 33(2), pp.27-29.
- Silverman, J. and Kinnersley, P., 2012. Calling time on the 10-minute consultation. *Br J Gen Pract*; 62(596), pp.118-119.
- Social Work Profession Act, 2003. [online] Available at: <<http://justiceservices.gov.mt/DownloadDocument.aspx?app=lp&itemid=16561&l=1>> [Accessed 8 February 2019].
- The Seebohm Report, 1968. *Journal of the Institute of Health Education*, 6(3), pp. 22-33. doi: 10.1080/03073289.1968.10799793.
- United Nations, Department of Economic and Social Affairs, Population Division, 2017. *World Population Ageing 2017*. [online] Available at: <https://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2017_Highlights.pdf> [Accessed 8 February 2019].
- Van Niel, C., Pachter, L.M., Wade Jr, R., Felitti, V.J. and Stein, M.T., 2014. Adverse events in children: predictors of adult physical and mental conditions. *Journal of Developmental & Behavioral Pediatrics*, 35(8), pp.549-551.
- Volland, P.J., 1996. Social work practice in health care: Looking to the future with a different lens. *Social Work in Health Care*, 24(1-2), pp.35-51.
- Williams, P. and Clare, A., 1979. Social workers in primary health care: the general practitioner's viewpoint. *The Journal of the Royal College of General Practitioners*, 29(206), p.554.

An evaluation of the use of nasal bones imaging in primary care in Malta

Dr Marilyn HARNEY, Dr Maria BARBARA and Dr Jurgen ABELA

ABSTRACT

Introduction

Fractures of the nasal bones are one of the commonest injuries sustained in facial trauma. The purpose of this study was to evaluate the use of nasal bone x-rays in the public primary care department in Malta and whether this has an impact on subsequent follow-up of patients presenting with nasal trauma.

Method

This was a retrospective cross-sectional observational study. Data of all nasal x-rays requested in primary health care during the year 2018 was gathered. Data input and analysis was carried out using Microsoft Excel® 2016.

Results

A total of 212 nasal bone x-rays were taken in primary care over the one-year study period, amounting to 65% of the total number of nasal x-rays taken in the public health sector in Malta. The majority of the patients were males. The most frequent age group was 21 to 30 years. The highest number of nasal bone x-ray requests (37.7%) was for unspecified trauma, followed by trauma secondary to a fall (25.9%), and trauma secondary to fights or assaults (16.5%). The majority (67%) of x-rays were reported as normal. Thirty point two per cent of all patients who had a nasal bone x-ray taken were referred to the Accident and Emergency (A&E) Department on the same day and 28.3% had Ear, Nose & Throat (ENT) Outpatients follow-up.

Conclusion

A substantial number of nasal bone x-rays are performed in the primary health care department in Malta on a yearly basis. Only a slight majority of those referred to ENT had an abnormal x-ray report, in keeping with data from previous studies highlighting the limitations of nasal x-rays in planning further management.

Keywords

Nasal bones, radiography, primary care.

INTRODUCTION

Fractures of the nasal bones are one of the commonest injuries sustained during facial trauma (Johnston and Jones, 2017). This is in view of the prominence of the nose, making it more susceptible to injury (Koh, et al., 2016). Common mechanisms of injury resulting in trauma to the nasal bones include falls, motor vehicle accidents, involvement in fights or assaults, and sports injuries.

The assessment of trauma to the nose should include a comprehensive history exploring the mechanism of injury and symptoms thereafter, and a thorough examination. Physical examination is the main means through which isolated nasal bone fractures are diagnosed and management depends heavily on the clinical findings (Haraldson, 2018; Hoffman, 2015; Johnston and Jones, 2017; Koh, et al., 2016; Kucik, Clenney and Phelan, 2004; Sciberras and Borg Xuereb, 2008). Clinical examination is important in order to identify and manage any

resulting immediate complications, and thus preventing complications occurring at a later stage. Late complications might include nasal deformity, septal necrosis, airway obstruction and psychological disturbance (Sciberras and Borg Xuereb, 2008).

The value of plain radiographic imaging (x-rays) in the diagnosis and management of nasal bone injuries has been found to be very limited, and may at times also be confusing (Hoffman, 2015; Johnston and Jones, 2017; Koh, et al., 2016; Kucik, Clenney and Phelan, 2004; Haraldson, 2018). Fifty per cent of injuries subsequently confirmed to include a nasal fracture are initially missed on plain x-rays, and conversely, suture lines, vascular markings and old fractures can all result in false positive reports, even by radiologists trained in this field (Kucik, Clenney and Phelan, 2004; Haraldson, 2018; Hoffman, 2015). In summary, decisions on management of trauma to nasal bones are largely dependent on clinical features and nasal x-rays are thus not indicated (Oluwasanmi and Pinto, 2000; European Commission Directorate-General for the Environment, 2000). Furthermore, should there be the presence of extraocular movement abnormalities, cerebrospinal fluid (CSF) rhinorrhea or malocclusion of the jaw, a computerized tomography (CT) scan is the imaging modality recommended to assess for mandibular, facial or base of skull fractures (Kucik, Clenney and Phelan, 2004; Koh et al., 2016).

Despite this, a significant number of nasal bone x-rays are performed in both primary and secondary care in the public health sector in Malta.

The aim of this study was to evaluate the use of nasal bone x-rays in the public primary care department in Malta. The objectives of this study were:

- To quantify the number of nasal bone x-rays taken in primary care.
- To describe the patient demographics, reason for x-ray request and source of referral for the x-ray.
- To analyze the results of the nasal bone x-rays performed in primary care and any subsequent follow-up organized for the patients in secondary care.

METHOD

Data collection

This was a retrospective cross-sectional observational study. A list of all nasal bone x-rays taken during the period of 1st January 2018 till 31st December 2018 in both primary and secondary care in the public health sector in Malta (that is, all Government Health Centres and Mater Dei Hospital) was compiled using the GE Health Care Centricity Universal Viewer[®] system.

Subsequently, a form was designed using Microsoft Excel[®] to facilitate collection of data. Since this study focused on the nasal bone x-rays taken in primary care, only data of the nasal bone x-rays taken in Government Health Centres was collected. This was done using the iCM[®] (Information Clinical Manager) and GE Health Care Centricity Universal Viewer[®] system.

Data collected included the following:

- The month, day and time that the x-ray was taken.
- The age, gender, locality and nationality of the patient.
- The source of referral for the x-ray.
- The reason for the x-ray request. This list was compiled after a review of all x-ray requests.
- Whether the x-ray result was normal or abnormal.
- Whether the patient had a registered Accident and Emergency (A&E) department episode on the iCM[®] system on the day the x-ray was taken.
- Whether the patient had an Ear, Nose & Throat (ENT) outpatients episode registered on the iCM[®] system in the month after the x-ray was taken.

Data analysis

Data input and analysis was carried out using Microsoft Excel[®] 2016.

Study approval

Approval was obtained from the Department of Primary HealthCare and the Data Protection officer of the Department prior to the commencement of the study.

RESULTS

Number of nasal bone x-rays

During the period of 1st January 2018 to 31st December 2018 a total of 324 nasal bone x-rays were taken in Mater Dei Hospital and Government Health Centres. Of these, 212 nasal bone x-rays, i.e. 65% of the total number of x-rays, were taken in primary care. Our study will focus on the x-rays taken in primary care.

Demographic details

The majority of patients (53.8%) who had a nasal bone x-ray taken in primary care over the one-year study period were males, and 46.2% were females. The age range was 4 to 91 years, with the most frequent age group being 21 to 30 years. The age/gender distribution of these patients is reproduced in Figure 1.

The majority of patients (85.9%) were Maltese, with 14.1% being non-Maltese nationals.

Most x-rays were requested at Paola Health Centre (33%), followed by 29.7% at Mosta Health Centre and 16.5% at Floriana Health Centre.

Month, day and time

The highest number of nasal bone x-rays were found to be taken during the summer months of July (12.3%) and August (12.3%). This was followed closely by March (11.8%) and May (9.9%). Figure 2 gives a detailed representation of these findings.

Most of the nasal bone x-rays were performed during weekdays (75%), with the rest being taken on Saturday and Sunday. Table 1 illustrates the percentage of nasal bone x-rays taken by time of day. The majority of x-rays are performed between 08:00 and 17:00, during both weekdays

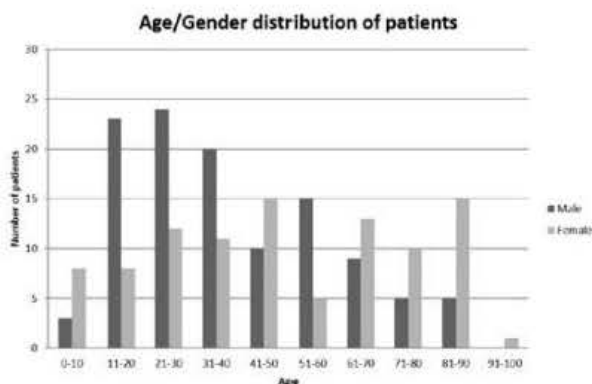


Figure 1: Age/gender distribution of patients who had a nasal bone x-ray performed

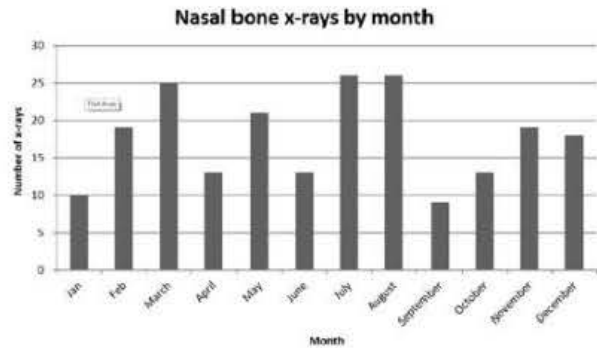


Figure 2: Distribution of nasal bone x-rays by month of the year

and weekends. Of particular note is the higher percentage of x-rays taken between 20:00 and 08:00 on a Sunday when compared to the rest of the week.

Source of referral for x-ray

The majority of nasal bone x-rays taken were requested by General Practitioners (GPs) working in the public sector (70%). This was followed by Foundation Year 2 (FY2) doctors (14%) and GP trainees (12%). Only 4% of nasal bone x-rays performed were requested by GPs in the private sector.

Reason for x-ray request

The highest number of nasal bone x-rays (37.7%) were requested for trauma, the type of which was not specified by the doctor on the request form. This was followed by trauma secondary to a fall (25.9%), and trauma secondary to being involved in a fight or assault (16.5%). No clinical details were provided in 6.6% of cases. Trauma secondary to sports injuries added up to 5.2% of cases, and 4.7% were documented police cases. A graphic representation of these results can be seen in Figure 3.

X-ray findings

The majority (67%) of the nasal bone x-rays were reported as normal, with the remaining 33% reporting a fracture of the nasal bones. Figure 4 gives a detailed graphic representation of the reasons for request of the x-rays which were reported as abnormal.

Time	Day of the week		
	Mon- Fri	Sat	Sun
08:00 - 17:00	70.8%	78.1%	50.0%
17:00 - 20:00	14.6%	15.1%	18.2%
20:00 - 08:00	14.6%	6.3%	31.8%

Table 1: Percentage of nasal bone x-rays taken by time of day

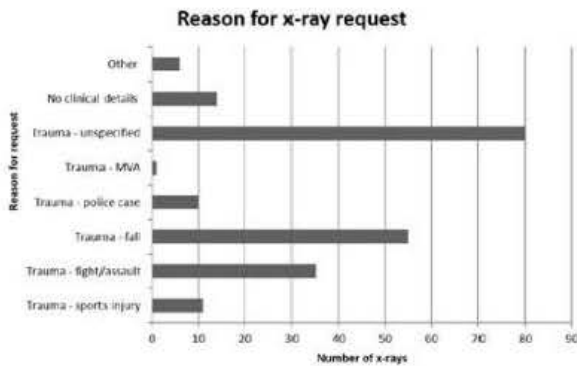


Figure 3: Reason for nasal bone x-ray requests

Patient follow-up

From the total number of patients who had a nasal bone x-ray taken, 30.2% were referred to the Accident and Emergency (A&E) Department on the same day the x-ray was performed. Of these, 36% had a normal x-ray result and 64% had an abnormal x-ray result. The majority of those referred to A&E had been initially referred for the x-ray in view of trauma secondary to a fall.

From the total number of patients who had a nasal bone x-ray taken, 28.3% had a registered Ear, Nose & Throat (ENT) Outpatients appointment in the four weeks following the date of the x-ray. Of those who had an ENT visit,

68% had been referred to A&E on the day the x-ray was taken. Fifty-four point three per cent of those who were seen at ENT outpatients had an abnormal x-ray result. The majority of those who were seen at ENT were referred for x-ray in view of trauma secondary to a fall (40%), followed by trauma which was not specified (25%) and trauma secondary to fights/assaults (11.7%).

The flowchart in Figure 5 summarizes the patient referrals to secondary care (A&E and/or ENT) according to the nasal bone x-ray results.

Further analyses

Age/gender and reason for nasal bone x-ray request
In females, trauma secondary to falls was the commonest documented reason for nasal x-ray request in all age groups except the 20-40 year age group. This was highest above 60 years of age with 63.2% of requests being for this reason. In the 20-40 year age group, trauma secondary to fights or assaults was the commonest reason for x-ray request.

The trend was similar in males, with trauma secondary to fights or assaults being the commonest documented reason in the 20-40 age group, and falls being commonest in males above 60 years (50% of requests in this age group).

Season and reason for nasal bone x-ray request
On further analyses, data of reason for x-ray request were analyzed according to season, i.e. winter (January to March), spring (April to June), summer (July to September) and autumn (October to December) and any notable trends were recorded.

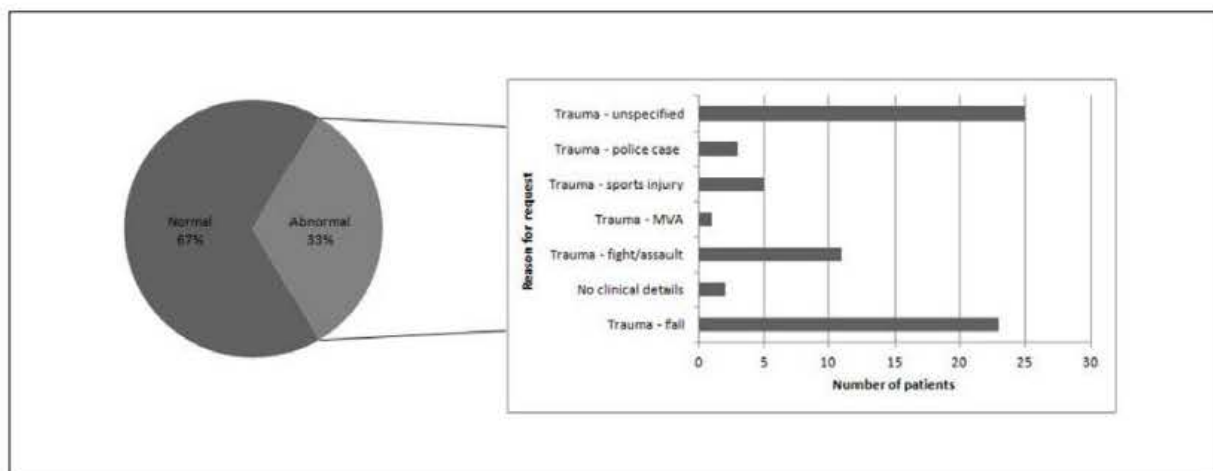


Figure 4: Nasal bone x-ray results and reason for request in x-rays reported as abnormal

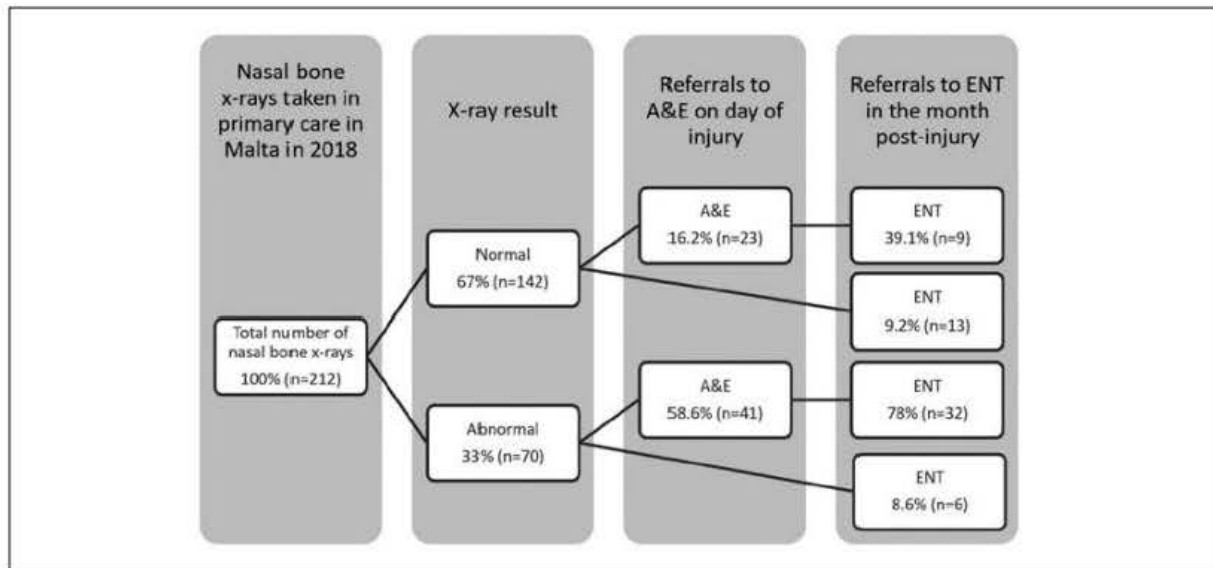


Figure 5: Summary of the referrals to secondary care according to the nasal bone x-ray results

The greatest number of x-ray requests for trauma secondary to falls were recorded during the winter period (37% of all x-rays taken during those months), followed by autumn (30%).

Nasal bone x-ray requests for trauma secondary to fights or assaults were most common during the summer months (24.6% of all x-rays taken during that season), followed by autumn (18%). X-ray requests documenting police cases were also most common during the summer months.

X-ray requests in view of trauma secondary to sports injuries were very similar throughout all seasons.

DISCUSSION

The substantial amount of nasal x-rays performed in health centres in Malta suggests that doctors in primary care might have a lower threshold for ordering nasal bone x-rays when compared to doctors in secondary care. Another reason for this high number of x-ray requests might be that patients with facial or nasal trauma tend to present initially to primary care rather than A&E.

Data collected and analyzed for the purpose of this study revealed a number of findings worth mentioning. Of particular note is that males were more likely to sustain nasal trauma when compared to females, and the age group affected the most was that between 21 and 30. This is similar to previous findings documented in the literature (Fornazieri et al., 2008; Bremke et al., 2009; Hameed et al., 2014). The commonest

documented reason for request in this age group was trauma secondary to being involved in fights and assaults. This may be explained by this age group of males partaking in more high risk behaviour, including altercations and dangerous sports activities. In contrast, females were more likely to sustain nasal trauma as their age progressed, when compared to men, with the over 60s consistently including substantially more female patients than males. Above 60 years of age, the commonest reason for request was trauma due to falls at 63.2%, which is similar to the results of the studies carried out by Fornazieri et al. (2008) and Bremke et al. (2009). Overall, the commonest documented reasons for nasal bone x-ray requests were falls, followed by fights or assaults, which is also shown in the study by Bremke et al. A study by Trinidad et al. (2013) showed that the incidence of nasal fractures in the UK was rising especially among girls and women, and this very often was a result of assault. In this study, x-ray requests in females for trauma secondary to fights or assaults was commonest in the 20 to 40 age group, and this type of injury should therefore always be kept in mind when assessing this cohort of patients.

Requests for nasal bone x-rays due to falls were noted to be more common during autumn and winter. It can be argued that the rainy weather increases the risk of falls. Similarly, requests for x-rays in view of trauma secondary to fights or assaults were noted to be higher during the summer months. Again it can be

argued that people tend to be outdoors and stay out later than usual during the months when the weather is good and days are longer. Notably, there was a higher percentage of x-rays taken on a Sunday night when compared to the rest of the week. This can be thought to be due to a higher rate of injuries when people are out on Sundays, which is often a day when people have time to participate in outdoor activities which might increase their risk of injury.

In this study, 74% of nasal x-rays were requested by GPs, in comparison to 12% requested by GP trainees and 14% by foundation doctors. This finding may be due to foundation doctors and GP trainees being more up-to-date with recent management guidelines. Of particular note is that GP trainees in Malta have a diverse and comprehensive training programme encompassing a multitude of different specialties, including ENT, and thus this may result in less unnecessary x-ray requests by this cohort of doctors. However, it is also worth noting that there are a greater number of fully qualified GPs when compared to GP trainees and foundation doctors, making the likelihood of the former requesting more nasal x-rays greater by probability. A study performed by Agrawal and Brayley in 2007, revealed that, after appropriate teaching of junior doctors within the Emergency Department, appropriate nasal clinical examination and documentation rates increased remarkably from 30% to 97%, with the rate of facial and nasal radiographs performed decreasing from 42% to 0%.

Out of the total nasal x-rays reported by a radiologist as 'abnormal' in this study, only 58.6% were referred to A&E for urgent review on the day, with 78% of these being given a subsequent ENT outpatients appointment. Notably, out of the total number of patients having an abnormal x-ray, just over half (54.3%) had an ENT appointment scheduled urgently for specialist review. The rest of the patients with an abnormal x-ray, comprising 32.8%, were discharged from primary care without subsequent ENT follow-ups or A&E review. However, further quantitative research can investigate whether there is an association between nasal bone x-ray findings and subsequent follow-up or secondary care referral.

A sizable proportion of requests (16.5%) were specifically for trauma due to assault. Thus, it might be plausible to postulate that x-rays may have been requested for medico-legal purposes. Yet, an analysis of Maltese law may prove such requests unnecessary, particularly because the reporting of fractures may not have legal implications when filling out police reports and grading the nature of harm. According to Maltese law, a nasal fracture resulting in nasal obstruction or deformity is to be considered as grievous bodily harm. Moreover, an injury need not necessarily involve a fracture for it to be deemed grievous. Lacerations that will leave a scar on the nose (and thus the face) or any harm that results in adverse psychological effects for a period of more than 30 days should be considered as grievous bodily harm. Conversely, in light of the fact that nasal fractures in healthy adults heal within an average time span of 3 weeks, non-displaced, uncomplicated fractures may fall under the category of slight bodily harm (Sciberras and Borg Xuereb, 2008).

Strengths and limitations

Since this study incorporated data pertaining throughout an entire year, the cohort included a substantial number of patients thus providing an adequate representation of the whole year. Despite variations between the months, with the highest number of requests being in July and August, seasonal bias was not a feature that could skew data in this study. This is one of the advantages derived from comprehensive data collection. Moreover, since x-rays from all health centre regions were pooled into this study, regional bias did not play a feature in the results.

The online x-ray request form on the iCM® system proved to be an asset in this study. Obligatory information fields directing the physician to specify the reason for request and suspected pathology helped to allow analysis of the prevalence of specific reasons for request in the context of patient demographics. Unfortunately, a limitation was the minimal information given at times, as exemplified in this study by the majority of requests being for 'trauma', but not specifying any further. Indeed, a clearer picture delineating the precise

mechanism of injury and outlining clinical findings would have been useful both for the radiologist interpreting the x-ray, as well as for the purpose of this study to ascertain whether any clinical findings were suggestive of complicated nasal fractures.

One of the limitations of this study was that patient notes were not reviewed. In view of this, the precise reason for A&E referral could not be established and ENT reviews may have been underscored, as reviews not registered on the iCM[®] system would have been missed. Furthermore, since patient notes were not reviewed, the clinical presentation as to whether there was a clinically evident fracture of the nasal bones could not be ascertained. Had this been done, it would have been possible to calculate sensitivity and positive predictive value of nasal bone x-rays for our population study.

Future research can tackle the nasal bone x-rays taken in secondary care, and compare the source of referral, reasons for request and subsequent follow-up in these two groups of patients.

Interpretation of nasal x-rays has a high reporter bias, with false negative rates of 50% (Sciberras and Borg Xuereb, 2008). Thus, in the compilation and stratification of reports as normal and abnormal, it is worth noting that a number of reports could have been falsely declared as being normal, whilst it is also possible that there were a number of false positives. For the purpose of this study, the actual x-rays were not reviewed again, and the reports were taken as final.

Furthermore, this study did not assess whether such x-ray requests were grounded in evidence-based medicine or whether they were cost-effective.

Recommendations

Since the majority of x-rays (65%) were requested in primary care, it would be highly appropriate to focus on educational campaigns aimed towards GPs. This can be done through organizing lectures and workshops about the diagnosis and management of nasal trauma. Forwarding updated literature and guidelines via email to all GPs may also be useful to serve as a reminder. Developing local guidelines to serve as a guide for

doctors in primary care might also be a valuable resource. Moreover, relevant legal advice should be made more accessible, by organizing seminars led by licensed legal advisors serving as an opportunity for GPs to clarify any queries or issues. This is of particular importance for the GP when filling out police reports and would also help to reduce unnecessary over-investigation for this specific purpose.

CONCLUSION

A substantial number of nasal bone x-rays are performed in the Primary HealthCare department in Malta on a yearly basis. Only a slight majority of those referred to ENT had an abnormal x-ray report, which hints at the limited usefulness of this investigation in the actual management of patients presenting with nasal trauma. It is recommended that training for GPs focuses on carrying out an appropriate assessment of patients and being more confident in diagnosing nasal bone fractures based on history-taking and a comprehensive clinical examination. This will help to minimize unnecessary radiographic investigations.

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REFERENCES

- Agrawal, N. and Brayley, N., 2007. Audit of nasal fracture management in accident and emergency in a district general hospital. *Journal of Evaluation in Clinical Practice*, [e-journal] 13(2), pp.295-7. Available through: <<https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2753.2006.00700.x>> [Accessed 3 March 2019].
- Bremke, M., Gedeon, H., Windfuhr, J.P., Werner, J.A., Sesterhenn, A.M., 2009. Nasal bone fracture: etiology, diagnostics, treatment and complications. *Laryngorhinootologie*, [e-journal] 88(11), pp.711-6. Available through: <<https://www.ncbi.nlm.nih.gov/pubmed/19562655/#ft>> [Accessed 3 March 2019].
- European Commission Directorate-General for the Environment, 2000. *Referral guidelines for imaging*. [online] Available at: <www.zvd.si/media/medialibrary/2010/11/rp-118.pdf> [Accessed 3 March 2019].
- Fornazieri, M.A., Yamaguti, H.Y., Moreira, J.H., Navarro, P.L., Heshiki, R.E., Takemoto, L.E., et al., 2008. Fracture of Nasal Bones: An Epidemiologic Analysis. *International Archives of Otorhinolaryngology*, [e-journal] 12(4), pp. 498-501. Available through: <http://arquivosdeorl.org.br/additional/acervo_eng.asp?id=562> [Accessed 3 March 2019].
- Hameed, I., Khan, M.I., Khan, S. and Khan, S., 2014. An audit of 120 cases of simple nasal bone fracture. *Gomal Journal of Medical Sciences*, [e-journal] 12(1), pp. 19-22. Available through: <<http://www.gjms.com.pk/ojs24/index.php/gjms/article/download/1024/613>> [Accessed 3 March 2019].
- Haraldson, S.J., 2018. *Nasal Fracture Workup: Imaging studies*. [online] Available at: <<https://emedicine.medscape.com/article/84829-workup#c6>> [Accessed 12 February 2019].
- Hoffman, J.F., 2015. An Algorithm of the Initial Management of Nasal Trauma. *Facial Plastic Surgery*, [e-journal] 31(03), pp.183-193. Available through: <<https://www.thieme-connect.com/products/ejournals/html/10.1055/s-0035-1555618>> [Accessed 12 February 2019].
- Johnston, M. and Jones, N., 2017. *Nasal injuries*. [online] Available at: <<https://www.entuk.org/nasal-injuries-0>> [Accessed 12 February 2019].
- Koh, J.H., Bhatti, O., Mahmood, A., and Agar N., 2016. Traumatic nasal injuries in general practice. *Australian Family Physician*, [e-journal] 45(09), pp.650-653. Available through: <<https://www.racgp.org.au/afp/2016/september/traumatic-nasal-injuries-in-general-practice/>> [Accessed 12 February 2019].
- Kucik, C.J., Clenney, T. and Phelan, J., 2004. Management of Acute Nasal Fractures. *American Family Physician*, [e-journal] 70(7), pp. 1315-1320. Available through: <<https://www.aafp.org/afp/2004/1001/p1315.html>> [Accessed 12 February 2019].
- Oluwasanmi, A.F. and Pinto, A.L., 2000. Management of nasal trauma – widespread misuse of radiographs. *British Journal of Clinical Governance*, [e-journal] 5(2), pp.83-85. Available through: <<https://doi.org/10.1108/14664100010343872>> [Accessed 3 March 2019].
- Sciberras, N.C. and Borg Xuereb, H.K., 2008. Review of the financial and medicolegal implications of nasal fractures seen at St Luke's Hospital. *Malta Medical Journal*, [e-journal] 20(03), pp.32-35. Available through: <<https://core.ac.uk/download/pdf/46602194.pdf>> [Accessed 12 February 2019].
- Trinidade, A., Buchanan, M.A., Farboud, A., Andreou, Z., Ewart, S., Mochloulis G., et al., 2013. Is there a change in the epidemiology of nasal fractures in females in the UK. *The Journal of Laryngology and Otology* [e-journal] 127(11), pp.1084-1087. Available through: <<https://www.cambridge.org/core/journals/journal-of-laryngology-and-otology/article/is-there-a-change-in-the-epidemiology-of-nasal-fractures-in-females-in-the-uk/5CAE86927199F4B4C7F88F40C102B6C7>> [Accessed 3 March 2019].

Depression in patients with Type 2 Diabetes in Maltese primary care

Dr Tania CARDONA and Dr Glorianne PULLICINO

ABSTRACT

Background

Type 2 diabetes and depression are two common chronic conditions affecting the Maltese population with significant and costly effects on health. Multiple studies have demonstrated a higher prevalence of depression in diabetic patients and a link with uncontrolled diabetes; however, despite this, depression is still not considered as important to chronic conditions in terms of the effects it has on health.

Objectives

This study was conducted to estimate the prevalence of depression in type 2 diabetic patients in primary care and to study their associated risk factors.

Method

A quantitative, cross-sectional, retrospective, descriptive study was performed among 400 participants with type 2 diabetes attending diabetes clinics within the public health centres in Malta. Patients completed a self-administered questionnaire to quantify depressive symptoms and to study patient and disease characteristics. Convenience sampling was used to collect the data.

Results

Data analysis showed that the prevalence of depression is around 29.7% among type 2 diabetic patients. Younger diabetics, women, lower educational levels, unemployment, obesity,

a family history of depression and uncontrolled diabetes were found to be associated with a higher risk of developing depressive symptoms.

Conclusions

Screening for depression in type 2 diabetic patients is important due to the high prevalence and significant impact on health. Appropriate management can significantly improve the outcome of both conditions and consequently improve both health and quality of life.

Key words

Type 2 diabetes, depression, prevalence, primary care

INTRODUCTION

Diabetes and depression are two highly prevalent conditions in the Maltese population (Ministry for Social Policy, 2008) with studies showing that diabetic patients can be more prone to suffering from depression than the rest of the population (Cols-Sagarra, et al., 2016).

In Malta, approximately 50,000 people, or 13.2% of the population, between the ages of 20 and 79 years suffer from type 2 diabetes (International Diabetes Federation, 2017), with approximately 10,000 people unaware of having the disease (Cuschieri, et al., 2016). Chronic depression affects around 20,000 people or 5.1% of the Maltese population (World Health Organization, 2016). The direct and indirect costs associated with the burden of both conditions can be staggering, especially when factoring in

the morbidity and mortality associated with these conditions if they are not well-treated (Ministry for Energy and Health – Health, 2014). Diabetes costs the Maltese public around 29 million euros per year, or 3.64% of the total health expenditure (Cuschieri, et al., 2016). While there is no data available for Malta, studies have shown that mental ill health costs developed countries in the European Union around 3-4% of the total health expenditure (Gabriel and Liimatainen, 2000).

Several studies have demonstrated a link between depression and chronic conditions. This often results in worsening of the patient's quality of life independently of the chronic condition on its own and an increased risk of developing complications (Cassano and Fava, 2002; Chapman, Perry and Strine, 2005).

It is possible to reverse the effect that depression has on diabetes by early recognition and adequate treatment of depression, either with psychopharmacological agents and/or psychotherapy, depending on the patients' characteristics and needs (Chapman, Perry and Strine, 2005). Despite several studies indicating a link between depression and poor control of diabetes, depression is still not considered to be as important as chronic health conditions in terms of the effect it has on general health (Moussavi, et al., 2007).

The aim of this study is to identify the type 2 diabetic patients most likely to develop depression in a primary care setting. The objectives are to study the prevalence of depression and examine the associated factors in type 2 diabetic patients.

METHOD

A quantitative, cross-sectional, retrospective, descriptive study was carried out in a random sample of patients attending the diabetic clinics in the Mosta, Floriana and Paola health centres. The inclusion criteria included subjects older than 18 years, having an established diagnosis of type 2 diabetes, in a stable condition, those who consented to participate, and attended the clinic during the study period. Subjects having another type of diabetes or cognitive impairment, those attending other clinics in the health centre, and those who were unable to perform the

study, unstable or refused to participate were excluded. The recruitment process was carried out between June and September 2018. A total of 400 questionnaires were collected, with 123 questionnaires collected from Mosta, 151 questionnaires from Floriana and 126 questionnaires from Paola Health Centre. Those that did not satisfy the inclusion criteria were excluded from the final number.

Ethical approval from the Faculty and University of Malta Research Ethics Committees was obtained in addition to permission from the Data Protection Officer of the Primary HealthCare department. All patients taking part in the study gave consent after explanation of what the study entailed. The data was collected via a self-administered questionnaire and no study-specific interventions were carried out.

The questionnaire used consisted of a validated tool to measure depression, the Patient Health Questionnaire-9 (PHQ-9) (Kroenke, et al., 2010), and a questionnaire developed by the author to quantify the patient sociodemographic and disease characteristics. These were translated to Maltese and peer-reviewed to reduce translation errors. A pilot study amongst 17 subjects was carried out in Birkirkara Health Centre to improve the understandability of the questionnaires.

The PHQ-9 was developed specifically to assess the severity of depression and monitor the effectiveness of treatment. It can also be used to make a tentative diagnosis of depression in populations at risk (Kroenke, Spitzer and Williams, 2001). Scores of 0, 1, 2 and 3 are assigned to the

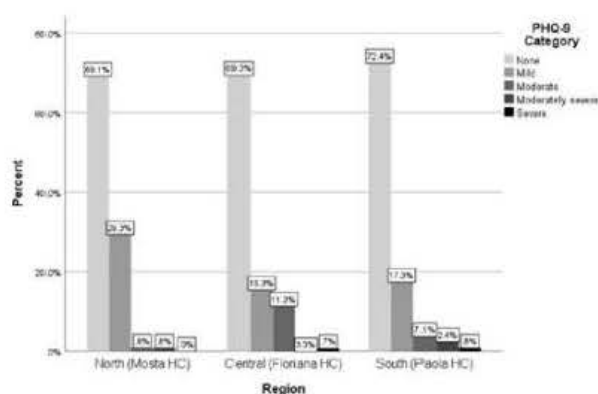


Figure 1: Regional differences according to PHQ-9 Depression Categories

response categories: "not at all", "several days", "more than half the days" and "nearly every day" respectively. The total score ranges from 0 to 27, with the following scores: 0-4 (none), 5-9 (mild), 10-14 (moderate), 15-19 (moderately severe) and 20-27 (severe depression) (Kroenke, et al., 2010).

The sociodemographic data collected included the age, gender, nationality, marital status, highest level of education, employment status and monthly income. Questions about general health included smoking status, weight and family history of diabetes and depression. The disease characteristics questions assessed the years with diabetes, medication used, medication compliance, the subjective and objective diabetic control and the presence of co-morbidities and diabetes complications.

For descriptive analysis, the absolute (N) and relative (%) frequencies were used to describe qualitative variables. The non-parametric Kruskal-Wallis test was used to compare the mean depression scores between several independent groups, clustered by demographic variables, such as age and gender. Pearson's Chi-squared and Fisher's tests were used to assess the association between two categorical variables when using depression categories. A p-value of less than 0.05 was used to signify statistical significance. Data analysis was performed using the Statistical Package for Social Science (SPSS) program Version 25.0 (IBM Corp, 2017).

RESULTS

The mean age of all the participants was 69 years, and 54% of participants were men. Women were generally older and more morbidly obese, more likely to be widowed, worked at home, had a lower income and received minimal education. Men smoked more, were less compliant with medication and had worse glucose control. Hypertension and dyslipidaemia were commoner in women, while myocardial infarction and cerebrovascular accidents were more prevalent in men. Depression was commoner in women, with 37% of the female cohort having some degree of depression compared to 23.6% of the male cohort.

An overview of the participants' characteristics according to gender can be viewed in Table 1.

Significant results for gender differences were obtained for marital status, the level of education and employment, smoking, the presence of co-morbidities and complications, and the presence or absence of depression. Tables 2, 3 and 4 detail the participants' characteristics according to presence of depression. The results show that women and younger diabetic patients had a higher risk of developing depression; same as those with a poorer educational level, those who had no job and were not pensioners, those who were obese and those with a family history of depression. The result of the 2-hour post-prandial capillary glucose test as reported by the participants, and the perceived diabetic control as measured by the participants' self-rating of their usual control, were recorded. Both indicated that uncontrolled diabetes is a strong risk factor for development of depression.

A summary of the p-values obtained from the results of the non-parametric Kruskal-Wallis and Chi-square tests used to study the statistical significance of different characteristics in the development of depression can be seen in Table 5.

DISCUSSION

Table 1 shows that the prevalence of depression in the Maltese diabetic population is around 29.7% (95% Confidence Interval: 25.4%-34.4%), which is comparable to a similar study by Cols-Sagarra, et al. (2016) whereby the prevalence was 29.2%. Similarly, a systematic review concluded that around a third of diabetics developed depression (Roy and Lloyd, 2012).

Several international studies showed that women are more prone to developing depression than men (Cols-Sagarra, et al., 2016; Roy and Lloyd, 2012; Salinero-Fort, et al., 2018). This current study was concordant, with 37% of female participants reporting depressive symptoms compared to 23.6% of men. Similarly, younger patients with diabetes reportedly were more at risk, possibly due to the increased co-morbid disease in younger diabetics (Roy and Lloyd, 2012). Comparable results were replicated in this study with 39.1% of those younger than 65 years having depressive symptoms contrasting with 26.0% of those 65 years or older. The exact figures can be observed in Table 2.

This study did not find any significant association between depressive symptoms and the nationality, possibly due to the much higher proportion of Maltese participants. A review of the literature did not provide any conclusive association between these factors, as few studies pointed towards a positive association while others failed to show any relation (Roy and Lloyd, 2012; Salinero-Fort, et al., 2018). This hints at the idea that multiple factors are involved, including the possible genetic predisposition and the social status of immigrants in their new homeland (Roy and Lloyd, 2012). More detailed studies are required in this area to fully understand the effect of different nationalities on the development of depressive symptoms in diabetics.

When reviewing local regional differences, no overall significance was found between the presence of depression and place where patients were reviewed. However, upon comparing with the PHQ-9 depression categories, a statistically significant result was obtained ($p=0.006$). Subjects reviewed in the northern region (Mosta) were found to have a higher risk for mild depression, while those in the central region (Floriana) had a higher prevalence of moderate and moderately-severe depressive symptoms. Severe depression was commonest in the southern region served by Paola Health Centre, with 0.8% of participants followed closely by 0.7% in the region served by Floriana Health Centre (Figure 1). This could be explained by the socio-economic differences between the regions, where people living in the southern harbour region of Malta, which is served by Paola Health Centre, have a lower average household disposable income and higher unemployment rates than other regions (National Statistics Office, 2017).

Lower level of education, unemployment, poor financial situation and the unmarried state were all positively associated with increased risk of depression (Engum, et al., 2005; Roy and Lloyd, 2012). This study was concordant in relation to education and employment, whereby those with a low educational level and unemployment (including those who work at home or live on social benefits) had a higher risk of developing depression. The financial and marital status were however not statistically significant (Table

3). Evidence showed that poor social support is a known risk for depression (Roy and Lloyd, 2012); thus it might be that despite a poor financial situation and the unmarried state, the affected persons might still be receiving adequate social support, either from their close family and friends, or from state benefits.

Obesity, smoking, and the presence of co-morbid diseases such as cardiovascular ischaemia, cerebrovascular accidents, and retinopathy, all of which are associated with the development of diabetes, have been positively linked with an increased risk of depression (Engum, et al., 2005; Roy and Lloyd, 2012). The present study found statistically significant association with obesity only, and not with smoking and the presence of comorbidities and diabetic complications (Table 3). Similarly, the study by Col-Sagarra et al. (2016) did not find any association in this regard; however, there was a positive association with smoking and no correlation with obesity. These variations might reflect different methodologies for quantifying the different factors in each study, as there was more reliance on the subjects' interpretation of their general health in this study, while factors in the Spanish study more reliance was put on objective measurements when classifying weight and defining cardiovascular risk factors (Cols-Sagarra, et al., 2016).

Depressive symptoms were present in 44.8% of those reporting a family history of depression, while in those having a family history of diabetes the proportion was 29.8% (Table 3). Similarly, a study by Salinero-Fort, et al. (2018) reported a positive correlation with a family history of depression but not type 2 diabetes. Few studies have investigated the relationship between the duration of diabetes and the development of depression, which according to Salinero-Fort, et al., (2018) was found to be significant. This was not however replicated in this study, possibly due to recall bias.

The study by Cols-Sagarra, et al., (2016), did not find any significant difference between the use of different medication with depressive symptoms ($p=0.07$). Conversely, the current study showed that vildagliptin was associated with a higher prevalence of depressive symptoms.

Vildagliptin is commonly used as second or third-line treatment when other medications were not adequate to achieve good glycaemic control, indicating that hard-to-treat diabetes might increase the risk for depression. This was reflected strongly when investigating the subjective and objective glucose control, whereby subjects were asked to rate their usual glucose control and to quote their 2-hour post-prandial glucose finger prick test. The prevalence of depressive symptoms was higher in patients with poor glycaemic control. These results were in concordance with other studies which showed that uncontrolled diabetes was associated with a higher prevalence of depressive symptoms (Roy and Lloyd, 2012; Salinero-Fort, et al. 2018). Table 4 gives a more detailed review of these results.

Study strengths

The pilot study carried out helped to fine-tune the questionnaire and pre-empt problems prior to the main study. The large sample of 400 participants chosen from the three main health centres helped ensure that there was a good cross-sectional representation of the population, while the validated PHQ-9 questionnaire used allowed comparison with other studies in the literature.

Study limitations

When comparing the outcome of this study with other studies, the different methodologies utilized and limitations must be taken into consideration (Roy and Lloyd, 2012). Some of the limitations of this study include self-report and response bias, both of which depend on the subjects answering the questions honestly, and the Hawthorne effect, as the questionnaire was carried out in a waiting area with most subjects asking for the questions to be read out to them. Furthermore, recall bias needs to be

considered in questions requiring remembering certain information, while subjective questions depended on the subjects' interpretation of the question. Moreover, due to time and resource constraints, peripheral clinics and Gozo were excluded from the study, and convenience sampling was used.

CONCLUSION

This study determined the prevalence of depression in the local type 2 diabetic patients and those factors strongly associated with development of depressive symptoms.

Increasing awareness of both health care professionals and the general population about depression and the risks it imposes on diabetic patients should be the first step so that effective action could be implemented. Furthermore, local structured guidelines can help to screen diabetic patients for depression. These recommendations can help to serve as guidance for GPs and other clinicians, policy makers, public health educators and researchers to improve the management of diabetic patients with depression.

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Table 1: Overview of participants' characteristics according to gender

Variable	Total N=400	Males N=216	Females N=184	p-value
DEMOGRAPHIC INFORMATION				
Mean of Age (S.D; 95% C.I.)	69.0 (8.80; 68.13-69.86)	68.4 (8.98; 67.2- 69.61)	69.7 (8.54; 68.44-70.92)	0.150**
Age N(%)				0.126
<65 years	115 (28.7%)	69 (60.0%)	46 (40.0%)	
>= 65 years	285 (71.3%)	147 (51.6%)	138 (48.4%)	
Nationality N(%)				0.312*
Maltese	391 (97.8%)	213 (54.5%)	176 (45.5%)	
Other	9 (2.3%)	3 (33.6%)	6 (66.7%)	
Marital Status N(%)				<0.001*
Single	39 (9.8%)	22 (56.4%)	17 (43.6%)	
Married	283 (70.8%)	66 (58.7%)	117 (41.3%)	
Separated	15 (3.8%)	11 (73.3%)	4 (26.7%)	
Divorced	7 (1.8%)	3 (42.9%)	4 (57.1%)	
Widowed	56 (14.0%)	14 (25.0%)	42 (75.0%)	
SOCIOECONOMIC STATUS				
Level of Education N(%)				<0.001*
Up to Primary School	188 (47.0%)	82 (43.6%)	106 (56.4%)	
Secondary School	152 (38.0%)	90 (59.2%)	62 (40.8%)	
Tertiary Education	56 (14.0%)	41 (73.2%)	15 (26.8%)	
Post-Tertiary Education	4 (1.0%)	3 (75.0%)	1 (25.0%)	
Employment Status N(%)				<0.001
Currently Working	41 (10.3%)	27 (65.9%)	14 (34.1%)	
Work at home/Depend on social benefits/ Don't Work	86 (21.5%)	18(20.9%)	68 (79.1%)	
Retired	273 (68.3%)	171 (62.6%)	102 (37.4%)	
Monthly Income N(%)				*0.066
< €800	331 (82.8%)	170 (51.4%)	161 (48.6%)	
€800 - €1500	56 (14.0%)	38 (67.9%)	18 (32.1%)	
€1500 - €2500	12 (3.0%)	7 (58.3%)	5 (41.7%)	
> €2500	1 (0.3%)	1 (100.0%)	0 (0.0%)	
Region N(%)				0.908
North	123 (30.8%)	66 (53.7%)	57 (46.3%)	
Central	150 (37.5%)	83 (55.3%)	67 (44.7%)	
South	127 (31.8%)	6 (52.8%)	60 (47.2%)	
GENERAL HEALTH				
Smoking N(%)				<0.001
Never Smoked	220 (55%)	85 (38.6%)	135 (61.4%)	

Variable	Total N=400	Males N=216	Females N=184	p-value
Ex-Smoker	135 (33.8%)	94 (69.6%)	41 (30.4%)	
Currently Smoking	45 (11.3%)	37 (82.2%)	8 (17.8%)	
Weight N(%)				0.213
Not Obese	168 (42%)	95 (56.5%)	73 (43.5%)	
Obese	193 (48.3%)	105 (54.4%)	88 (45.6%)	
Morbidly Obese	39 (9.8%)	16 (41.0%)	23 (59.0%)	
Family History N(%)				0.714
Type 2 Diabetes	319 (65.6%)	170 (53.3%)	149 (46.7%)	0.573
Depression	96 (19.8%)	49 (51.0%)	47 (49.0%)	0.505
None	71 (14.6%)	42 (59.2%)	29 (40.8%)	0.337
DISEASE CHARACTERISTICS				
Years with diabetes N(%)				0.943
<5 years	108 (27.0%)	60 (55.6%)	48 (44.4%)	
5-10 years	107 (26.8%)	59 (55.1%)	48 (44.9%)	
10-15 years	91 (22.0%)	47 (51.6%)	44 (48.4%)	
>15 years	94 (23.5%)	50 (53.2%)	44 (46.8%)	
Medication Use N(%)				0.530
Metformin	363 (59.7%)	201 (55.7%)	160 (44.3%)	0.057
Gliclazide	171 (28.1%)	91 (52.6%)	82 (47.4%)	0.703
Insulin	37 (6.1%)	17 (45.9%)	20 (54.1%)	0.302
Vildagliptin	37 (6.1%)	17 (45.9%)	20 (54.1%)	0.302
Compliance N(%)				0.137
Always took medication	322 (80.5%)	168 (52.2%)	154 (47.8%)	
Sometimes forgot	78 (19.5%)	48 (61.5%)	30 (38.5%)	
Never took medication	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Subjective Diabetic Control N(%)				0.963*
Very Good	36 (9.0%)	20 (55.6%)	16 (44.4%)	
Good	244 (61.0%)	129 (52.9%)	115 (47.1%)	
Could be Better	111 (27.8%)	62 (55.9%)	49 (44.1%)	
Not Controlled	9 (2.3%)	5 (55.6%)	4 (44.4%)	
Objective Diabetic Control N(%)				0.877
<10 mmol/L	257 (64.3%)	139 (54.1%)	118 (45.9%)	
≥10 mmol/L	42 (10.5%)	24 (57.1%)	18 (42.9%)	
Don't remember	101 (25.3%)	53 (52.5%)	48 (47.5%)	
Presence of Co-morbidities and Diabetic Complications N(%)				0.021
Hypertension	299 (38.2%)	159 (53.2%)	140 (46.8%)	0.570
Dyslipidaemia	278 (35.5%)	146 (52.5%)	132 (47.5%)	0.369
Retinopathy	59 (7.5%)	36 (61.0%)	23 (39.0%)	0.241
Nephropathy	17 (2.2%)	8 (47.1%)	9 (52.9%)	0.557
Neuropathy	12 (1.5%)	9 (75.0%)	3 (25.0%)	0.138
Heart Disease	70 (9.0%)	51 (72.9%)	19 (27.1%)	<0.001

Variable	Total N=400	Males N=216	Females N=184	p-value
CVA or TIA	18 (2.3%)	12 (66.7%)	6 (33.3%)	0.270
No Complications	29 (3.7%)	16 (55.2%)	13 (44.8%)	0.895
DEPRESSION STATUS				
Presence/Absence of Depression N (%)				0.004
No Depression	281 (70.3%)	165 (58.7%)	116 (41.3%)	
Have Depression	119 (29.7%)	51 (42.9%)	68 (57.1%)	
Depression Category according to PHQ-9 N (%)				0.017*
No Depression	281 (70.3%)	165 (58.7%)	116 (41.3%)	
Mild	81 (20.3%)	38 (46.9%)	43 (53.1%)	
Moderate	27 (6.8%)	10 (37.0%)	17 (63.0%)	
Moderately-Severe	9 (2.3%)	2 (22.2%)	7 (77.8%)	
Severe	2 (0.5%)	1 (50.0%)	1 (50.0%)	

*Fisher's Exact Test was used

**Independent Sample t-test was used

Table 2: Demographic information according to the presence of depression

Variable	Without Depression n= 281	With Depression n=119	p-value
Mean of Age (S.D; 95% C.I.)	69.72; (8.62; 68.71 – 70.73)	67.27; (9.00; 65.63-6.90)	0.011**
Age N(%)			0.009
<65 years	70 (24.9%)	45 (39.1%)	
>= 65 years	211 (75.1%)	74 (26.0%)	
Gender N(%)			0.004
Male	165 (76.4%)	51 (23.6%)	
Female	116 (63.0%)	68 (37.0%)	
Nationality N(%)			1.00*
Maltese	274 (70.1%)	117 (29.9%)	
Other	7 (77.8%)	2 (22.2%)	
Marital Status N(%)			0.119*
Single	33 (84.6%)	6 (15.4%)	
Married	199 (70.3%)	84 (29.7%)	
Separated	8 (53.3%)	7 (46.7%)	
Divorced	5 (71.4%)	2 (28.6%)	
Widowed	36 (64.3%)	20 (35.7%)	

* Fisher's Exact Test was used due to small numbers

** Independent Samples t-test was used to calculate the p-values to assess any significant difference between the mean of age of those not depressed and those depressed

Table 3: Socioeconomic status and general health characteristics according to the presence of depression

Variable	Without Depression n= 281	With Depression n=119	p-value
Level of Education N(%)			0.013*
Up to Primary School	123 (65.4%)	65 (34.6%)	
Secondary School	106 (69.7%)	46 (30.3%)	
Tertiary Education	48 (85.7%)	8 (14.3%)	
Post-Tertiary Education	4 (100%)	0 (0%)	
Employment Status N(%)			0.010
Currently Working	31 (75.6%)	10 (24.4%)	
Work at home/Depend on social benefits/ Don't Work	49 (57.0%)	37 (43.0%)	
Retired	201 (73.6%)	72 (26.4%)	
Monthly Income N(%)			0.080*
< €800	224 (67.7%)	107 (32.3%)	
€800 - €1500	46 (82.1%)	10 (17.9%)	
€1500 - €2500	10 (83.3%)	2 16.7%)	
> €2500	1 (100%)	0 (0%)	
Region N(%)			0.807
North	85 (69.1%)	38 (30.9%)	
Central	104 (69.3%)	46 (30.7%)	
South	92 (72.4%)	35 (27.6%)	
Smoking N(%)			0.609
Never Smoked	159 (72.3%)	61 (27.7%)	
Ex-Smoker	92 (68.1%)	43 (31.9%)	
Currently Smoking	30 (66.7%)	15 (33.3%)	
Weight N(%)			0.001
Not Obese	133 (79.2%)	35 (20.8%)	
Obese	127 (65.8%)	66 (34.2%)	
Morbidly Obese	21 (53.8%)	18 (46.2%)	
Family History N(%)			0.016
Type 2 Diabetes	224 (70.2%)	95 (29.8%)	0.979
Depression	53 (55.2%)	43 (44.8%)	<0.001
None	51 (71.8%)	20 (28.2%)	0.748

* Fisher's Exact Test was used due to small numbers

Table 4: Disease characteristics of participants according to the presence of depression

Variable	Without Depression n= 281	With Depression n=119	p-value
Years with diabetes N(%)			0.826
<5 years	80 (74.1%)	28 (25.9%)	
5-10 years	78 (72.9%)	29 (27.1%)	
10-15 years	58 (63.7%)	33 (36.3%)	
>15 years	65 (69.1%)	29 (30.9%)	
Medication Use N(%)			0.074
Metformin	254 (70.4%)	107 (29.6%)	0.804
Gliclazide	113 (65.3%)	60 (34.7%)	0.051
Insulin	21 (56.8%)	16 (43.2%)	0.059
Vildagliptin	20 (54.1%)	17 (45.9%)	0.024
Compliance N(%)			0.826
Always took medication	227 (70.5%)	95 (29.5%)	
Sometimes forgot	54 (69.2%)	24 (30.8%)	
Never took medication	0 (0.0%)	0 (0.0%)	
Subjective Diabetic Control N(%)			<0.001
Very Good	27 (75.0%)	9 (25.0%)	
Good	190 (77.9%)	54 (22.1%)	
Could be Better	58 (52.3%)	53 (47.7%)	
Not Controlled	6 (66.7%)	3 (33.3%)	
Objective Diabetic Control N(%)			0.002
<10 mmol/L	192 (74.7%)	65 (25.3%)	
>=10 mmol/L	20 (47.6%)	22 (52.4%)	
Don't remember	69 (68.3%)	32 (31.7%)	
Presence of Co-morbidities and Diabetic Complications N(%)			0.303
Hypertension	207 (69.2%)	92 (30.8%)	0.443
Dyslipidaemia	183 (65.8%)	95 (34.2 %)	0.003
Retinopathy	35 (59.3%)	24 (40.7%)	0.047
Nephropathy	9 (52.9%)	8 (47.1%)	0.111
Neuropathy	6 (50.0%)	6 (50.0%)	0.119
Heart Disease	40 (57.1%)	30 (42.9%)	0.008
CVA or TIA	11 (61.1%)	7 (38.9%)	0.385
No Complications	23 (79.3%)	6 (20.7%)	0.268

Table 5: The p-values for the Kruskal-Wallis and Chi-square tests comparing the mean Depression Score, the PHQ-9 depression categories and the Presence of Depression against No Depression

Factor	PHQ-9 Mean Depression Scores (Kruskal-Wallis Test)	PHQ-9 Depression Categories (Chi-Squared Test)	Presence of Depression (Chi-Squared Test)
Gender	<0.001	0.027	0.004
Age	0.04	0.027	0.009
Nationality	0.169	0.915	0.617
Region	0.590	0.006	0.807
Marital status	0.484	0.387	0.143
Highest level of education attended	0.025	0.49	0.017
Employment status	0.001	0.05	0.010
Financial status	0.183	0.592	0.100
Smoking	0.509	0.348	0.609
Weight	<0.001	0.007	0.001
Family history of type 2 diabetes and depression	0.005	<0.001	0.003
Years with type 2 diabetes	0.39	0.587	0.826
Medication in use	0.081	0.059	0.074
Medication compliance	0.794	0.806	0.826
Subjective diabetic control	<0.001	<0.001	<0.001
Objective diabetic control	0.001	0.012	0.002
Co-morbidities and complications	0.070	0.914	0.303

REFERENCES

- Cassano, P. and Fava, M., 2002. Depression and public health: an overview. *Journal of psychosomatic research*, 53(4), pp. 849-857.
- Chapman, D.P., Perry, G.S. and Strine, T.W., 2005. The vital link between chronic disease and depressive disorders. *Preventing chronic disease*, 2(1), pp. A14.
- Cols-Sagarra, C., Lopez-Simarro, F., Alonso-Fernandez, M., Mancero-Romero, J., Perez-Unanua M.P., Mediavilla-Bravo, J.J., Barquilla-Garcia, A. and Miravet-Jimenez, S., on behalf of the Work Group of Diabetes SEMERGEN., 2016. Prevalence of depression in patients with type 2 diabetes attended in primary care in Spain. *Primary Care Diabetes*, 10(5), pp. 369-75.
- Cuschieri, S., Vassallo, J., Calleja, N., Pace, N., Abela, J., Ali, B.A., Abdullah, F., Zahra, E. and Mamo, J., 2016. The diabetes health economic crisis-the size of the crisis in a European island state following a cross-sectional study. *Archives of public health - Archives belges de sante publique*, 74, pp. 52-60.
- Engum, A., Mykletun, A., Midthjell, K., Holen, A. and Dahl, A.A., 2005. Depression and diabetes: a large population-based study of sociodemographic, lifestyle, and clinical factors associated with depression in type 1 and type 2 diabetes. *Diabetes Care*, 28(8), pp. 1904-9.
- Gabriel, P. and Liimatainen, M., 2000. *Mental Health in the Workplace: Introduction, Executive Summaries*. International Labour Office, Geneva.
- IBM Corp., 2017. *IBM SPSS Statistics for Windows*. 25.0th edn, Armonk, NY: IBM Corp.
- International Diabetes Federation, 2017. *IDF Diabetes Atlas: 8th edition*. Brussels, Belgium: International Diabetes Federation.
- Kroenke, K., Spitzer, R.L. and Williams, J.B., 2001. The PHQ-9: validity of a brief depression severity measure. *Journal of general internal medicine*, 16(9), pp. 606-613.
- Kroenke, K., Spitzer, R.L., Williams, J.B.W. and Löwe, B., 2010. The Patient Health Questionnaire Somatic, Anxiety, and Depressive Symptom Scales: a systematic review. *General Hospital Psychiatry*, 32(4), pp. 345-359.
- Ministry for Energy and Health - Health, 2014. *Diabetes: A National Public Health Priority 2015-2020*. Malta: Government of Malta.
- Ministry for Social Policy, 2008. *Mental Well Being - European Health Interview Survey 2008*. Malta: Department of Health Information and Research.
- Moussavi, S., Chatterji, S., Verdes, E., Tandon, A., Patel, V. and Ustun, B., 2007. Depression, chronic diseases, and decrements in health: results from the World Health Surveys. *Lancet (London, England)*, 370(9590), pp. 851-858.
- National Statistics Office, 2017. *Regional Statistics Malta - 2017 Edition*. Lascaris, Valletta: National Statistics Office. ISBN: 978-99957-29-62-2
- Roy, T. and Lloyd, C.E., 2012. Epidemiology of depression and diabetes: a systematic review. *Journal of affective disorders*, 142(Suppl), pp. S8-21.
- Salinero-Fort, M.A., Gomez-Campelo, P., San Andres-Rebollo, F.J., Cardenas-Valladolid, J., Abanades-Herranz, J.C., Carrillo de Santa Pau, E., Chico-Moraleja, R.M., Beamud-Victoria, D., de Miguel-Yanes, J.M., Jimenez-Garcia, R., Lopez-de-Andres, A., Ramallo-Farina, Y., De Burgos-Lunar, C. and MADIABETES Research Group, 2018. Prevalence of depression in patients with type 2 diabetes mellitus in Spain (the DIADEMA Study): results from the MADIABETES cohort. *BMJ open*, 8(9), pp. e020768-2017-020768.
- World Health Organization, 2016. *Global Report on Diabetes*. France: WHO.