CLINICAL PROFILE AND PSYCHIATRIC COMORBIDITY OF TREATMENT-SEEKING INDIVIDUALS WITH PATHOLOGICAL GAMBLING IN SOUTH-AFRICA

By

Dr. Heidi Sinclair

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SUPERVISORS

Prof. Dan Stein

FRCPC, PhD

Professor of Psychaitry

University of Cape Town.

Dr. Don Wilson

FCPsych (SA), MBChB

Principal Consultant Psychiatrist,

Groote Schuur Hospital

And

Head of Addiction Psychiatry Unit,

University of Cape Town.

DECLARATION

I, **Dr. Heidi Sinclair**, hereby declare that the work on which this thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is in being, or is to be submitted for another degree in this or any other university.

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DEDICATION

To Coba Hough – my grandmother

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ABSTRACT

Background: Pathological gambling is a prevalent and disabling mental illness, which is frequently associated with mood, anxiety, and substance use disorders. However, there is relatively little data on comorbidity in individuals with pathological gambling from low and middle income countries such as South- Africa.

Method: The Mini-International Neuropsychiatric Interview (MINI) was used to assess the frequency of DSM-IV-TR disorders among 100 male and 100 female treatment-seeking individuals with pathological gambling in South-Africa. The Sheehan Disability Scales were used to assess functional impairment.

Results: : In a South-African sample of individuals with pathological gambling, the most frequent current comorbid psychiatric disorders were major depressive disorder (28%), anxiety disorders (25.5%) and substance use disorders (10.5%). Almost half of the individuals had a lifetime diagnosis of major depressive disorder (46%). Female pathological gamblers were significantly more likely to be diagnosed with a comorbid major depressive disorder or generalised anxiety disorder than their male counterparts.

Conclusions: Data from South-Africa are consistent with previously published data from high income countries. Psychiatric comorbidity is common among individuals with pathological gambling.

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LIST OF ABBREVIATIONS

ASI: Addiction Severity Index

BSI: Brief Symptom Inventory

CIDI: Composite International Diagnostic Interview

CPGI: Canadian Problem Gambling Index

DSM-III: Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition

DSM-IV-TR: Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision

DSM-5: Diagnostic and Statistical Manual of Mental Disorders, 5th Edition

GA: Gambling Anonymous

ICD-9: International Classification of Diseases 9th Edition

LPM: Limited Pay Out Slot Machine

MINI: Mini International Neuropsychiatric Interview

NCS-R: National Comorbidity Survey - Replication

NESARC: National Epidemiologic Survey on Alcohol and Related Conditions

NRGP: National Responsible Gambling Programme

OCD: Obsessive Compulsive Disorder

PG-YBOCS: Yale Brown Obsessive Compulsive Scale for Pathological Gambling

SASH: The South-African Stress and Health Study

SCID: Structured Clinical Interview for DSM Disorders

SCI-PG: Structured Clinical Interview for Pathological Gambling

SD: Standard Deviation

SDS: Sheehan Disability Scale

SOGS: South Oaks Gambling Scale

CHAPTER ONE: INTRODUCTION

Gambling is a highly popular activity, and in many parts of the world, the gambling industry is a major contributor to the economy. In South-Africa, gambling has a long history, but since 1996 there has been a steady growth in the formal industry. It has been argued that although the vast majority of individuals are able to indulge in gambling without significant consequences, in a minority gambling may be associated with significant impairment. However, there are few data on this issue in the South-African context. In the next two chapters, I will review the historical and more recent scientific literature relevant to these issues.

THE HISTORY OF GAMBLING

People have enjoyed gambling as a leisure activity for thousands of years. The earliest gambling tools, which included knucklebones and six-sided dice cubes, date from a site in modern Iraq, and are thought to be 6000 years old. Different societies have preferred different forms of gambling. In India, cock and ram fights were once popular. During the Chinese Tang Dynasty, games similar to Poker, were played with leaves. Florence, in the 16th century, was the first European state to have a lottery. In the 18th century lotteries became an economic tool for financing civic projects in the new American states.

The indigenous populations of southern Africa also seem to have had forms of gambling. Pre-colonial Bushman (San) paintings depict individuals engaged in a type of gambling activity. The settlement of the Dutch at the Cape during the 17th century saw the first ban on gambling in 1673. However, the Diamond and Gold Rush in the Witwatersrand area attracted gambling on a grand scale.

Societies have long had laws to regulate gambling, and have also recognized that certain individuals may develop excessive gambling. Egyptian hieroglyphics showed that gambling laws were already established by 3000BC. A range of historical records depict individuals with excessive gambling and describe how such individuals suffered a range of adverse consequences. The different levels of gambling are discussed in the next section.

DEFINING THE DIFFERENT LEVELS OF GAMBLING

In the English-speaking world and some parts of Europe, problem and pathological gambling are treated as a significant public health problem. At the same time, these jurisdictions recognise that for most of those who engage in it, gambling is a harmless leisure activity that may yield public benefits by contributing more in taxation than other leisure industries and/or contributing to out-of-town tourism. (Australian Government Productivity Commission, 2010 and British Gambling Prevalence Study, 2007).

Low risk gambling is done socially with family, friends, or colleagues, but not alone. It is often combined with other forms of entertainment. Low risk gambling is done for limited amounts of time, both in frequency and duration. Recreational benefits are found in the excitement of taking a chance, the thrill of winning, and the fun of being with friends while gambling. Rarely is the benefit a financial gain. Low risk gambling has predetermined limits for losses that are acceptable. An acceptable amount for a gambling loss could range from a very small amount to whatever would not affect ongoing family spending for ongoing needs and wants.

Pathological gambling has been officially recognized in the psychiatric nomenclature for two decades. In 1977 ‘pathological gambling’ was recognised as a disorder by the World Health Organisation and it was subsequently included in the International Classification of Diseases (ICD-9). In 1980 the American Psychiatric Association included ‘Pathological Gambling’ in the Diagnostic and Statistical Manual for Psychiatric Disorders (DSM-III). Diagnostic criteria for pathological gambling currently share similarities with those of drug dependence, including features of diminished control, tolerance, withdrawal, and impairment in important activities (American Psychiatric Association 2000). The essential feature of the disorder is repeated gambling, which continues and often increases despite adverse social consequences such as impoverishment, impaired family relationships and disruption of personal life. Although the criteria were modelled on the diagnostic criteria for substance dependence, it was classified in the section on disorders of impulse control.

In the DSM-5, pathological gambling was reclassified to disordered gambling, and has been included in the category of ‘Addiction and Related Disorders’ (American

Psychiatric Association 2013). Like other disorders in this category, pathological gambling has been frequently associated with significant psychiatric co-morbidity, as well as with psychosocial sequelae such as legal problems (Potenza et al 2000).

During the time of the current study, the American Psychiatric Association defined pathological gambling using DSM-IV criteria as persistent and recurrent maladaptive gambling behaviour, meeting at least five of the criteria below, as long as the behaviors were not better explained by a manic episode. A score of 3 or 4 represented a group considered diagnostically as 'sub threshold pathological gamblers' or 'potential pathological gamblers'. This group has often been referred to as **'**problem gamblers'.

For an individual to be diagnosed with pathological gambling 5 or more of the following criteria need to be met and a diagnoses of a current hypomanic or manic episode must have been excluded:

Preoccupation. The subject has frequent thoughts about gambling experiences, whether past, future, or fantasy.

Tolerance. As with drug tolerance, the subject requires larger or more frequent wagers to experience the same "rush".

Withdrawal. Restlessness or irritability associated with attempts to cease or reduce gambling.

Escape. The subject gambles to improve mood or escape problems.

Chasing. The subject tries to win back gambling losses with more gambling.

Lying. The subject tries to hide the extent of his or her gambling by lying to family, friends, or therapists.

Loss of control. The person has unsuccessfully attempted to reduce gambling.

I**llegal acts.** The person has broken the law in order to obtain gambling money or recover gambling losses. This may include acts of theft, embezzlement, fraud,

forgery, or bad checks.

Risked significant relationship. The person gambles despite risking or losing a relationship, job, or other significant opportunity.

Bailout. The person turns to family, friends, or another third party for financial assistance as a result of gambling.

GAMBLING IN SOUTH-AFRICA

Gambling in South-Africa was originally treated as immoral and largely prohibited, apart from horse-racing. Subsequently, casinos were allowed to develop, most famously the Sun City resort, in what the South-African government then regarded as self-governing 'homelands'. With the arrival of a democratic dispensation and the incorporation of the homelands into the provinces, national legislation required the legal position of these casinos to be regularised. More importantly, new legislation was required to address the huge increase in illegal machine gambling throughout South-Africa in the late 1980s. On the basis of a report by a government commission established before 1994, the new government passed a National Gambling Act in 1996 that permitted a national maximum of 40 casinos to be licensed and regulated by provincial governments, with each province being allocated its own maximum number. The Act also provided for the introduction of a national lottery and the eventual legalisation and regulation of limited pay out machines (LPMs, with a maximum jackpot of R500) in venues such as bars. Having recognised that it was right and in its interests to do so, the South-African gambling industry established a National Responsible Gambling Programme (NRGP) which began operating in 1999. It was subsequently agreed that this programme should be overseen by regulators as well as by industry executives through a not-for-profit, Section 21 Company. In order to provide additional background material about the nature of gambling in South-Africa, we also review the activities of the NRGP.

THE NRGP AND ITS WORK

The NRGP has three main divisions that work closely together within a common structure: treatment, prevention and research. Treatment begins with the provision of a free counselling line.

From its headquarters in Cape Town, the NRGP offers a 24-hour 7 days a week

telephone counselling line. This is the first-point of contact for many individuals with gambling related concerns, including the individual with problem gambling; family, friends, or work colleagues; gambling venue workers; and professionals are able to call the helpline. The counselling line is widely advertised, using a range of methods, including stickers on slot machines and in gambling venues; newspaper, radio and television advertisements; and the yellow pages. The counselling line is operated by six counselors, who have been trained in gambling problems, and who receive weekly supervision from a clinical psychologist and a psychiatrist.

When individuals with problem gambling call, counsellors focus on developing a relationship and providing psychoeducation, using principles of motivational intervention. Where appropriate, callers are referred for a comprehensive face to face evaluation with a registered psychologist or social worker in their geographical area.

The treatment network consists of 80 mental health professionals (clinical psychologists and social workers) in each of the major centres as well as various other towns in South-Africa and Namibia. Where indicated, treatment practitioners are able to provide an evidence-based treatment program free of charge. Treatment practitioners meet annually to undergo training.

Clients with complex gambling problems can obtain free psychiatric consultation and access to a debt-counselling service, as well as other mental health and addiction services. Family members are also able to receive counselling.

From its inception to February 2011, the NRGP's toll free counselling line received more than 308 000 calls; 12 810 callers were referred for free treatment (or about 100 per month on average), and 107 received inpatient treatment for pathological gambling.

Prevention consists mainly of educating actual and potential problem gamblers about the dangers of gambling and how to avoid them. This takes the form of problem gambling awareness campaigns targeted both at the population at large and at vulnerable communities including the young, the poor and those receiving benefits. These are conducted by print, television and radio advertising, distributing promotional and informational leaflets, brochures and newsletters, and participation in community outreach initiatives and special events. A key aspect of public

education informs the public that individual treatment is available around the clock and free of charge. Research conducted by the Research Division of the NRGP in 2010 showed that some 75% of South-African adults living in Gauteng knew that gambling can become as serious a problem as drink and drugs. About the same percentage of casino patrons also knew that free help is available to problem gamblers and their families, and they had heard of the work of the NRGP. For patrons of shopping malls these figures fell to 25%.

The NRGP has also developed a specific programme for school-goers, which addresses not only gambling but also decision-making in general, and which teachers have rated as highly effective. The NRGP also provides ongoing education to gambling boards, the gambling industry, the medical community, and a range of other sectors. A particularly innovative prevention work currently being developed and delivered by the NRGP is its programme called 'Taking Risks Wisely', which deals with all risk-taking behaviours – not just gambling – and provides a text-based teachers' manual with lesson plans, interactive exercises, etc. plus full web-based back-up including a comprehensive Handbook of Responsible Gambling. This has been piloted as part of the life skills curriculum for Grades 7 - 9, and material for Grades 10 - 12 will be completed in 2014.

The Research Division has included academics at local universities and collaborators abroad. The research objective has been to understand the nature, causes and prevalence of problem and pathological gambling, to facilitate the development of good public policy, and to enhance the effectiveness of prevention and treatment strategies. The NRGP conducted four prevalence studies between 2001 and 2009. It has also conducted follow-up research on selected participants and others, and research into gambling and poverty and the neurophysiology of problem and pathological gambling. Among the main research findings have been that the prevalence of problem and pathological gambling in South-Africa, has remained more or less stable or has slightly declined since 2000 and that pathological gambling is significantly correlated with psychiatric comorbidities-defined as two or more psychiatric disorders present in an individual occurring independently of chance where each diagnostic entity has the characteristic phenomenology and etiologic basis typically found when each disorder is in isolation (el-Guebaly et al, 1995).

Psychiatric comorbidities are important to delineate as it may aid in the development

of better etiological, preventative and treatment models for pathological gambling in South-Africa and other developing countries.

In the next chapter I will review the available international literature on comorbid psychiatric disorders in pathological gamblers.

CHAPTER TWO: LITERATURE REVIEW OF COMORBIDITY IN PATHOLOGICAL GAMBLERS

In this chapter I will review the international literature on comorbid psychiatric disorders in pathological gamblers. I will first look at results from a meta-analysis, then at results from epidemiological studies and then at results from treatment seeking pathological gamblers.

META-ANALYSIS

Lorains et al's review and meta-analysis of eleven international studies indicated that problem and pathological gamblers had high rates of comorbid psychiatric disorders (Lorains et al, 2011). The studies, all published between 1998 and 2010, included community representative samples from 4 developed countries. Six of the studies were from the United States of America, two from Canada, two from Switzerland and one from Korea. The most common comorbid psychiatric disorder (on average across the studies) was nicotine dependence (60.1 %), followed by a 'substance use disorder' (57.5 %). Slightly less prevalent were 'any type of mood disorder' (37.9 %) and lastly 'any type of anxiety disorder' (37.4 %). Precise prevalence rates of psychiatric comorbidities varied across the studies, in large part because most prevalence studies included only a very small number of pathological gamblers, but also because different studies used different methods to estimate prevalence. The fact that pathological gamblers have high prevalence rates for many comorbid psychiatric disorders was not, however, in dispute.

EPIDEMIOLOGICAL STUDIES

A number of epidemiological studies have been carried out to investigate the prevalence of comorbid mood disorders, anxiety disorders, substance use disorders, and other psychiatric disorders among pathological gamblers. In the largest and most representative epidemiological sample in the United States of America, Petry et al. investigated the comorbidity of pathological gambling with other psychiatric disorders by using the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) sample (Petry et al, 2005). The authors found that the lifetime rate of alcohol abuse or dependence was 73.2% among those identified as lifetime pathological gamblers versus 25.0% among non-gamblers.

Statistical analyses on the NESARC sample suggest pathological gamblers have a 6-fold increased risk of having an alcohol use diagnosis in their lifetimes, a 4.4-fold increased risk of illicit drug dependence and rates of major depression were about three times higher in pathological gamblers relative to non-gamblers. Bipolar disorder is generally considered an exclusionary criterion for pathological gambling, unless the two disorders occur independently, as gambling episodes may be better accounted for by a manic episode. Rates of a manic episode were 8-fold higher in pathological gamblers compared with non-gamblers. The NESARC study found that every anxiety disorder assessed occurred at significantly higher rates among pathological gamblers than non-pathological gamblers, including generalized anxiety disorder, panic disorder with and without agoraphobia, substance use disorder, and panic disorder. The National Comorbidity Survey Replication (NCS-R) additionally documented strong comorbidity of pathological gambling with "multimorbidity," which was not investigated by Petry et al (Kessler et al, 2008). The NCS-R results also indicated that in individuals with pathological gambling and comorbid psychiatric disorders, the onset of pathological gambling preceded the comorbid disorder 23.5% of the time, whereas pathological gambling followed the comorbid disorder 74.3% of the time (Kessler et al, 2008).

Bland et al used data from 7,214 individuals from Edmonton, Alberta, to investigate pathological gambling and co-morbid psychiatric disorders (Bland et al, 1993). It was found that pathological gamblers were 2.5 times more likely than non-gamblers to have a comorbid psychiatric disorder. In the sample, 33.0% of pathological gamblers met the criteria for a mood disorder; this rate was significantly higher than that in the non-gambler comparison group (14.2%). They also found that among the pathological gamblers in their sample, 26.7% had an anxiety disorder in their lifetime, which was significantly higher than the rate among non-gamblers (9.2%). Pathological gamblers were also significantly more likely than non-gamblers to have a substance use disorder (63.3% versus 19.0%) and obsessive-compulsive disorder (16.7% versus 2.3%).

Precise prevalence rates of psychiatric comorbidities varied across these epidemiological studies, but again the fact that pathological gamblers have high prevalence rates for many comorbid psychiatric disorders was not in dispute.

TREATMENT SEEKING POPULATION

Erbas at al looked at a German community sample of pathological gamblers and compared their lifetime prevalence of comorbid psychiatric disorders to that of pathological gamblers who were receiving inpatient treatment (Erbas et al, 2012). Pathological gamblers who were receiving inpatient treatment had higher lifetime prevalence rates of anxiety disorders, tobacco related disorders and substance related disorders than the pathological gamblers in the community sample.

In 2009 Shek et al examined 201 participants who sought gambling counselling from social service organisations in Hong Kong (Shek et al, 2009). The SCID, BSI, ASI-gambling section and the range of impaired functioning tool was used. The results showed that 63, 7% of the participants had at least one lifetime comorbid psychiatric disorder. In the participants with lifetime comorbid psychiatric disorders, 55% reported that the onset of the disorder was prior to the onset of pathological gambling. They also found that pathological gamblers with psychiatric comorbidities were significantly more severe in impairment and gambling problems The majority participants were males (87.3%). More detailed analyses revealed that 30, 8% had substance abuse disorders while 29, 4% had mood disorders.

In a European study by Jimenez-Murcia et al, a total of 498 patients with a DSM-IV-TR diagnosis of pathological gambling (11.8% females) were assessed with a semi-structured clinical interview and several clinical and personality scales (Jimenez-Murcia et al 2009). The results indicated that higher comorbidity with affective disorders was found in females (30.5%), while higher comorbidity with substance-related disorders was found in men (11.2%). A positive association was also detected between a history of psychiatric disorders and current comorbidity with substance-use disorders, as well as between alcohol abuse and age.

Toneatto et al studied a group of 169 Canadian Gamblers and reported that 10.1% were using drugs the month before treatment (Toneatto et al 2002). A considerable number of these gamblers had sought treatment for their alcohol and drug use

before seeking treatment for gambling problems. Welte et al found a strong relationship between current alcohol dependence and current pathological gambling, the odds ratio was 23.1 (Welte et al 2004). Their study also found that as the amount of drinking per day increased in the sample, the amount and severity of the gambling also increased.

Teo et al analysed data on 150 consecutive pathological gamblers who sought treatment from the Community Addiction Management Programme, Singapore, over a 4-year period from 2002 to 2006 (Teo et al 2007). Patients were then assessed by clinicians to establish the primary and comorbid psychiatric diagnoses. The most common comorbid disorders were mood disorders (14.7%), substance abuse (7.3%) and alcohol abuse or dependence (4.7%). Sixteen (10.7%) subjects had a history of suicidal attempts which had been precipitated by gambling-related issues.

Winslow et al compared 40 Singaporean adult pathological gamblers with 40 age and gender matched controls (Winslow et al 2010). The SOGS and Composite International Diagnostic Interview were used. 67, 5% of the pathological gamblers met lifetime DSM-IV criteria for either substance abuse disorder, mood disorder or anxiety disorder, whereas 22% of the controls met lifetime DSM-IV criteria for either substance abuse disorder, mood disorder or anxiety disorder.

Black et al studied 30 pathological gamblers in the USA and found that 40% of the participants met lifetime DSM-III-R criteria for anxiety disorder, 64% for substance abuse disorder and 60% met lifetime DSM-III-R criteria for a mood disorder (Black et al, 1998).

Preston et al examined the relationship between problem gambling, mental health and criminal behaviour in a sample of incarcerated Canadian male federal offenders (Preston et al, 2012). There were 254 participants and DSM-IV, SOGS and CPGI were used. Results indicated that problem gambling was significantly correlated with social anxiety, depression, substance abuse and impulsiveness. The results also indicated that the correlates of problem gambling were similar in offender and nonoffender populations. Anxiety, depression and stressful life experiences were significantly correlated with the severity of problem gambling, however the effect sizes of the correlations for the offender sample were much smaller than was found in the general population samples.

Tavares et al looked at 40 Brazilian pathological gamblers, 40 subjects with OCD and 40 healthy matched controls (Tavares et al, 2007). The participants with pathological gambling had a higher comorbidity with substance related disorders and the participants with OCD had higher comorbidity with somatoform disorders.

Abait et al looked at 62 (45 male and 17 female) pathological gamblers who attended self-help groups in Buenos Aires in Argentina (Abait et al, 2007). 84% of the participants were nicotine dependent and 12, 6% had alcohol abuse or dependence.

An early study of 162 Gamblers Anonymous (GA) members by Moran et al, 1969, in the United Kingdom found that 77% contemplated suicide and 20% had attempted it. Frank et al sampled 164 GA members and found 48% reported suicidal ideation alone, with an additional 13% relating histories of suicide attempts (Frank et al, 1991). In relatively small studies of pathological gamblers seeking professional out-patient treatment, 35% to 42% contemplated suicide and between 22% and 31% reported suicide attempts (Ibanez et al, 1992). In a more recent study, Petry et al studied 342 pathological gamblers during intake to a gambling treatment programme in the United States of America. By using the Addiction Severity Index, it was found that 32% of the participants had had suicidal ideation and 17 % had had suicide attempts during the month prior to the assessment (Petry et al, 2002).

Although comparisons between studies are difficult due to differences in samples, inclusion criteria, and assessment tools used, these studies generally showed a high and varied psychiatric comorbidity among pathological gamblers identified from general population samples, treatment seeking population samples and incarcerated population samples. Whether these variations were due to differences in interview methods, in settings or in psychosocial factors remain largely unknown. In general, we see higher comorbidity rates in clinical than in community samples, in inpatients than in outpatients and in the developed world compared to the developing world. The variations across different international settings highlight the need for local research to explore the extent and nature of co-morbid psychiatric disorders in treatment seeking pathological gamblers in South-Africa.

This literature search also showed that only a few studies had addressed the relationship between pathological gambling and comorbid psychiatric disorders in developing countries. Comorbidity in pathological gambling potentially has implications in the prevention and treatment of the primary psychiatric illness.

In order to provide additional background material about the lifetime prevalence of psychiatric disorders in South-Africa, we also reviewed the results of two nationwide studies.

PREVALENCE RATES OF PSYCHIATRIC DISORDERS AMONG THE GENERAL ADULT POPULATION IN SOUTH-AFRICA

Between 2002 and 2004 a nationally representative household survey was conducted in South-Africa. The World Health Organization Composite International Diagnostic Interview (CIDI) was used to generate diagnoses. The dataset analyzed included 4351 adult South-Africans of all racial groups.

The most prevalent lifetime DSM-IV/CIDI disorders were alcohol abuse (11.4%), major depression (9.8%), and agoraphobia (9.8%). The most prevalent class of disorders was estimated to be anxiety disorders (15.8%), followed by substance use disorders (13.3%) and mood disorders (9.8%). In comparison to data from other countries, South-Africa has a particularly high lifetime prevalence of substance use disorders. The lifetime prevalence estimate of any disorder was 30.3%, with 11.2% of respondents having two and 3.5% having three or more disorders. This is not as high an estimate as in the USA, where approximately half the population meets lifetime criteria for one or more DSM-IV/CIDI disorders.

National estimates of the lifetime prevalence and correlates of suicidal ideation, planning, and attempts among South-Africans, including specific cultural groups, were reported for the first time using the South-Africa Stress and Health Study (SASH). The 9.1% estimated prevalence of suicidal ideation is comparable to previous estimates from studies using clinical samples. (Deonarain, et al. 2000).

It is of note that in all the above mentioned studies on psychiatric comorbidity and pathological gambling, the vast majority of individuals studied, were male and that the focus was largely on lifetime prevalence rates and not current psychiatric comorbid disorders.

There are remarkable differences in gambling prevalence as well as psychiatric comorbidity of male and female pathological gamblers across countries. In the next paragraph I will discuss some of the relevant differences mentioned in the literature.

GENDER AND COMORBIDITY

It is well known that more males than females gamble. The South-African prevalence studies in 2009 indicated that 66% of males gambled as compared to 51% of females. In the past few years there has been an increase in the number of females with pathological gambling. According to the 2007 UK household survey there was an increase from 35% of females gambling in 2007 to 51, 7 % in 2010. A study by Welte et al revealed that the incidence of gambling among males and females were the same in the 20-30 year age group (Welte et al, 2011). In South-Australia, in 2004, 51, 7 % of clients seeking help for gambling problems were females (Gambling rehab bulletin, 2006).

Important differences exist in the features of pathological gambling in males and females. Although this is not the focus of this study, it remained of considerable relevance when studying psychiatric comorbidity and pathological gambling.

Females have higher mean ages at gambling initiation compared to men, a significantly shorter time from initiation to meeting criteria for pathological gambling and a significantly worse disease severity at the time of presentation to (Grant et al, 2012). Female pathological gamblers in treatment have higher prevalence rates of comorbid affective disorders and anxiety disorders, than males whereas male pathological gamblers in treatment have higher prevalence rates of comorbid substance-use disorders. (Jimenez-Murcia et al, 2009).

In conclusion, we reviewed data from different population groups of pathological gamblers and we emphasized that reported data must be interpreted with caution when making cross-national, cross-cultural and even cross-regional comparisons. Reasons for this include: variations in the reliability of statistics and differences in reported rates by different investigators. This study therefore seeks to fill the knowledge gap in a developing country like South-Africa where such has not been investigated. It is hoped that the emergent findings from the study will be useful in answering the question of the magnitude of psychiatric disorders among individuals with pathological gambling and that the results will help inform the practice of addiction psychiatry in South-Africa.

Table 1: Summary of literature review:

Ref.	**Country**	**Sample type**	**Measures**	**Prevalence Alcohol Dependence Or abuse NON-GAMBLERS**	**Prevalence Alcohol Dependence Or abuse PG**	**Prev Alcohol Abuse PG**	**Prevalence Alcohol Depend PG**		Prevalence Alcohol Dependence or abuse PG
Lorains (2011) N=11	USA Canada Switzerland Korea	General Population	Meta-analysis						60.1%
Pertry (2005)	USA	Community	AUDADIS	25%	73.2%				
Bland (1993) N=7214	Canada	Community	DIS						
Black (1998) N=30	USA	Community	DIS		63%				
Abait (2007) N=62	Argentina	Self-help groups	XXXXXXXXXX		12.6%				
Erbas (2012)	Germany	Community	XXXXXXXX		54.9%				

Erbas (2012) N=101	Germany	Inpatients	XXXXXXXX		55.5%	23.8%	31.7%		
Reference	**Country**	**Sample type**	**Measures**	**Prevalenc Nicotine Dependence PG**	**Prevalence any substance use disorder (excl. tobacco) PG**	**Prev any subst use dis order (excl. tobacco) Non-gambler**	**Prevalence Any mood disorder PG**	**Prev Any anx disord PG**	
Lorains (2011) N=11	USA Canada Switzer-Land Korea	Community representative	Meta-analysis	60.1%	57.5%		37.9%	37.4%	
Pertry (2005) N=43093	USA	Community	AUDADIS	60.4%	38.1%	8.7%	49.6%	41.3%	
Bland (1993) N=7214	Canada	Community	DIS		63.3%	19%	33%	26.7%	
Shek (2009) N=201	Hong Kong	Treatment seeking			30.8%		29.4%		

Black (1998) N=30	USA	Com-munity	DIS		27%		60%	40%	
Abait N=62	Argen-tina	Self-help groups	XXXXX	84%					
Erbas (2012) N=15023	Ger-many	Com-munity	XXXXX	78.2%			63.1%	37.1%	
Erbas (2012) N=101	Ger-many	Inpa-tients	XXXXX XX	86.1%	60.4%		61.4%	57.4%	
Ref-erence	**Coun-try**	**Sam-ple Type**	**Current mood disorde**	**Current anxiety disorder**	**Current substan-ce Related disorder**	**Cur-rent alco-hol abuse disor-der**	**current nico-tine depend ence**	**curr ent alco hol dep end enc e or abu se**	
Jimenez-Murcia (2009)-SCID-C N=498	Spain	Treat-ment seek-ing	12.1%		10.7%				
Teo (2007)-SCID-C N=150	Sin-gapore	Treat-ment Seek-ing	14.7%		7.3%			4.7%	

Abait (2007) N=62	Argen-tina	self-help groups					84%	12.6 %	
Black (1998) N=30	USA	Com-munity	50%	40%	13%			10%	

CHAPTER THREE: AIMS, OBJECTIVES AND METHODOLOGY

AIMS AND OBJECTIVES

I. To determine the nature of problem gambling among individuals seeking treatment for pathological gambling in South-Africa.

II. To determine the nature of psychiatric comorbidity among individuals seeking treatment for pathological gambling in South-Africa.

METHODOLOGY

3.1 Study design

This was a descriptive cross-sectional study.

3.2 Study locations

Data was collected from pathological gamblers who saw mental health practitioners in private practice. Prior to the start of the study, the participating private practitioners received sufficient training in using the screening questionnaires, the rating scales and interviews used for the study. They also agreed to be co-investigators in the study. Patients' names were masked and patients were identified in records by a numbering system. Consent forms clearly explained that when a patient participated in research, the patient's records automatically become part of the research database. Face sheets (containing such items as names and addresses) were removed from survey instruments, all research staff respected the importance of confidentiality and research records were stored in locked cabinets at Groote Schuur Hospital.

3.3 Study population

The study population consisted of 100 consecutive male pathological gamblers and

100 consecutive female pathological gamblers who sought treatment through the National Responsible Gambling Programme between 1 November 2011 and 31 October 2012. The participants were not reimbursed for their participation.

3.4 Sample selection

a. Inclusion criteria:

i) Participants aged 18 years and above

ii) Diagnoses of Pathological Gambling on the Structured Clinical Interview for Pathological Gambling.

b. Exclusion criteria:

i) Inability to give written informed consent.

3.5 Recruitment and Enrolment

Participants initially made contact with the National Responsible Gambling Programme through the counselling line. They were then referred to a treatment professional in their area for free cognitive behavioural therapy. Prior to commencing the therapy all gamblers had to complete a thorough psychiatric assessment. This was conducted by the trained treatment professional and once the gamblers met the criteria to participate in the study and gave written informed consent, the assessments were sent to the primary investigator at Groote Schuur Hospital.

3.6 Instruments

The Structured Clinical Interview for Pathological Gambling (SCI-PG):

The SCI-PG is a structured interview used to diagnose pathological gambling in patients, based on the Diagnostic and Statistical Manual of Mental Disorders 4th edition Text Revision (DSM-IV-TR). The psychometric properties of the SCI-PG demonstrate excellent test–retest and inter-rater reliability and concurrent and discriminant validity in the diagnosis of PG in treatment-seeking problem gamblers (Grant et al 2004). This interview also gathers data on the nature of the gambling done by the subject.

The Mini-International Neuropsychiatric Interview (M.I.N.I.):

The MINI is a short structured diagnostic interview for DSM IV-TR and ICD-10

psychiatric disorders. Results of the validation studies done on the MINI suggest that it succeeds in reliably and validly eliciting symptom criteria used in making a DSM IV-TR and ICD-10 diagnoses and does so in less than half the time needed for the Structured Clinical Interview for the DSM IV-TR (SCID) (Van Vliet et al 2007).

The Yale-Brown Obsessive-Compulsive Scale Adapted for Pathological Gambling (PG-YBOCS):

The Yale-Brown Obsessive-Compulsive Scale adapted for Pathological Gambling (PG-YBOCS) was developed to measure the severity and change in severity of pathological gambling symptoms. The PG-YBOCS is a 10-item clinician-administered questionnaire that measures the severity of problem and pathological gambling. The PG-YBOCS performed reasonably well psychometrically in a large clinical sample including subjects recruited in several different treatment studies and a large matched sample of healthy controls (Pallanti et al 2005).

The Sheehan Disability Scale (SDS):

The Sheehan Disability Scale (Sheehan et al, 1983) is a 3-item self-report scale measuring the severity of disability in the domains of work, family life/home responsibilities and social/leisure activities. Each of these three domains is scored on a ten-point Likert scale, where a score of 0 is ‘not at all impaired’, 5 is ‘moderately impaired’ and 10 is ‘very severely impaired’. It provides a measure of total functional disability (range 0-30). It has been shown to have adequate internal reliability (α-coefficients and factor analyses) and construct/criterion related validity (Leon *et al*, 1997). The SDS represents a simple, cost-effective, and sensitive assessment to measure disability and functional impairment in psychiatric disorders (Sheehan et al, 1996)

3. 7 Data Analysis:

Standard descriptive analyses were done, including means and standard deviation of continuous variables, and frequencies of dichotomous variables.

CHAPTER FOUR: RESULTS

SOCIO-DEMOGRAPHIC PROFILE

The mean age of the participants was 40 years (SD=10.53). More than a third of the participants were married (44%), 52 (26%) were divorced, and the rest were single or widowed. The majority had completed high school (at least 12 years of school education) and 157 participants (78.5%) were employed. Participants had experienced a problem with gambling for an average of 5 years, with the most popular gambling activities being casino slots (56%) and casino tables (22%). About a third of participants reported that a first degree relative had a perceived gambling problem.

Table 2: **Socio-demographic profile of sample**

		n / Mdn/ Mean	% of sample/ SD
Demographics N=200			
Mean age (SD)		40	10.53
Relationship Status			
	Single	44	22%
	Married	88	44%
	Divorced	52	26%
	Widowed	16	8%
Education			
	Less than high school	5	2.5%
	High school	112	56%
	College/ technikon	46	23%
	University	37	18.5%
Employment Status			
	Employed	157	78.5%
	Unemployed	37	18.5%
	Retired	6	3%
Sexual Orientation			
	Heterosexual	188	94%

	Homo/ bisexual	12	6%
Race			
	White	121	60.5%
	Black African	36	18%
	Asian	32	16%
	Coloured	11	5.5%
Nicotine consumption			
	Smoke cigarettes	103	51.5%
	Median no. of cigarettes smoked per day amongst smokers	20	10-20
Gambling History			
	Median no. of years gambling has been a problem (IQR)	5	
Gambling Activities			
	Casino slots	112	56%
	Tables	44	22%
	Horses	14	7%
	Internet	14	7%
	Other	16	8%
Family History			
	1st degree relative with a gambling problem	69	34.5%
	1st degree relative with a psychiatric problem	37	18.5%
Committed illegal acts as a result of gambling		69	34.5%
Assessment measures prior to treatment			
	Median score on SCI-PG (IQR)	7.0	6-8
	Median score on PG-YBOCS (IQR)	23.0	18-29
	Mean score on SDS (SD)	16.5	7.31

	(N=199)		

*SD= standard deviation; IQR = interquartile range

Figure 1: Age distribution of males and females

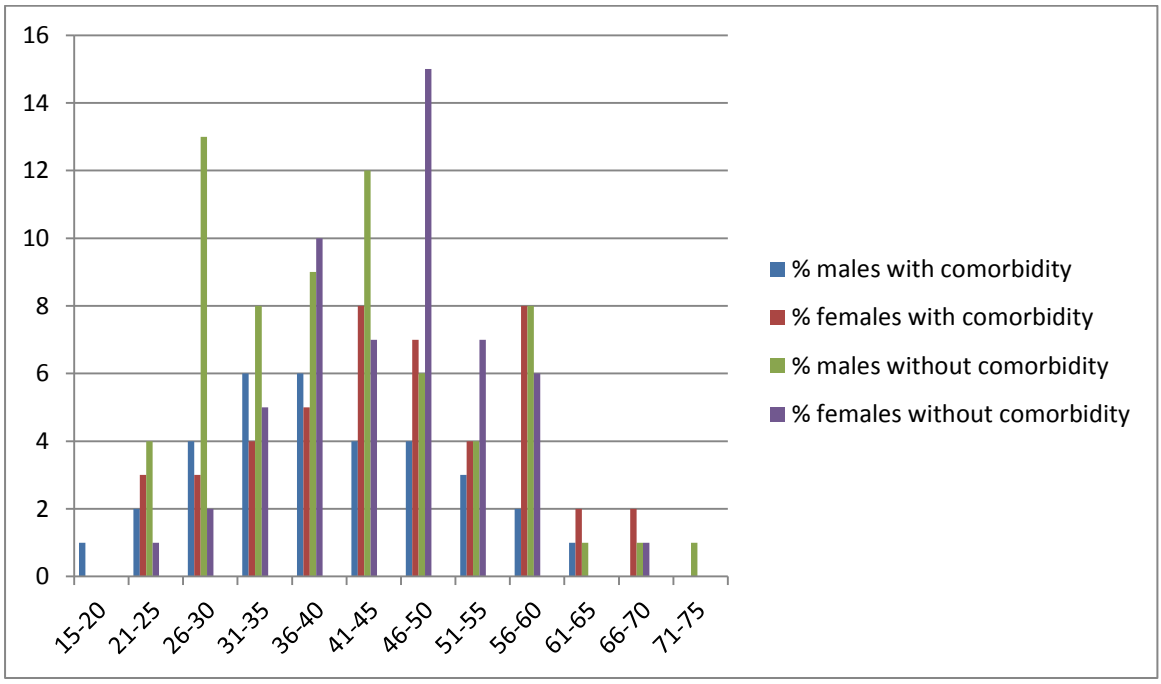


Figure 20 : Relationship status of pathological gamblers

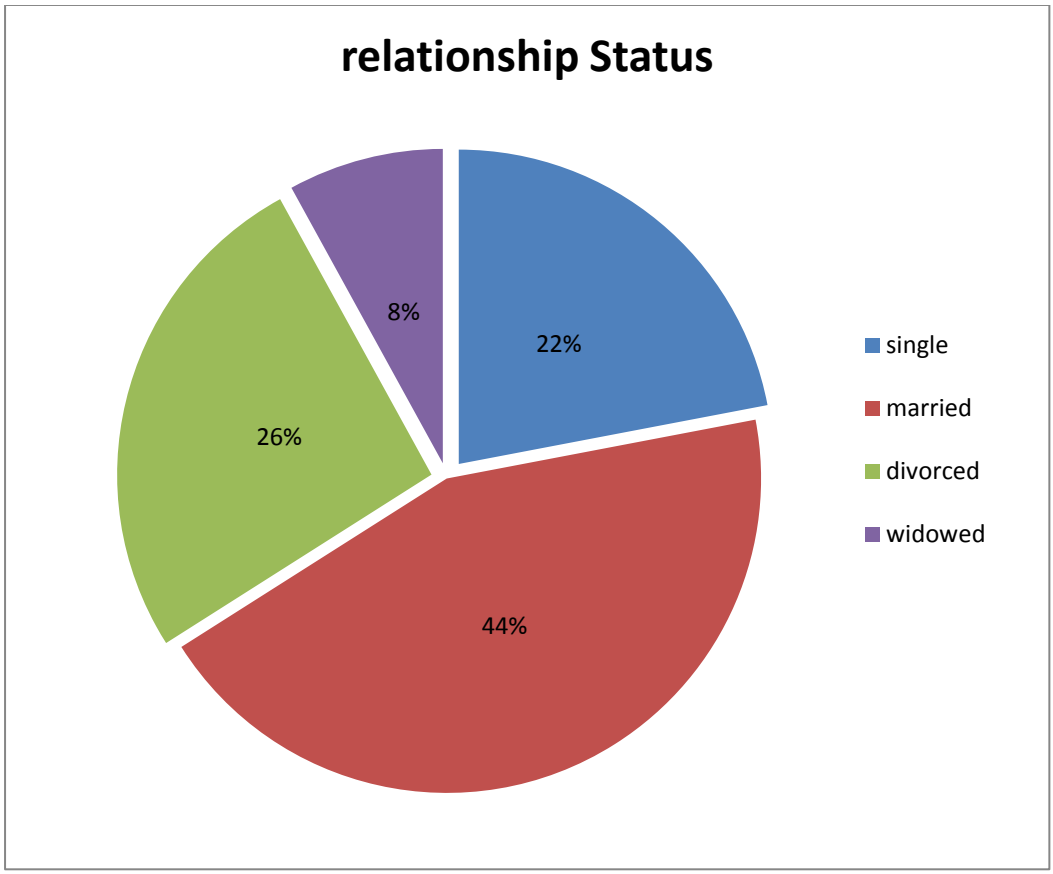
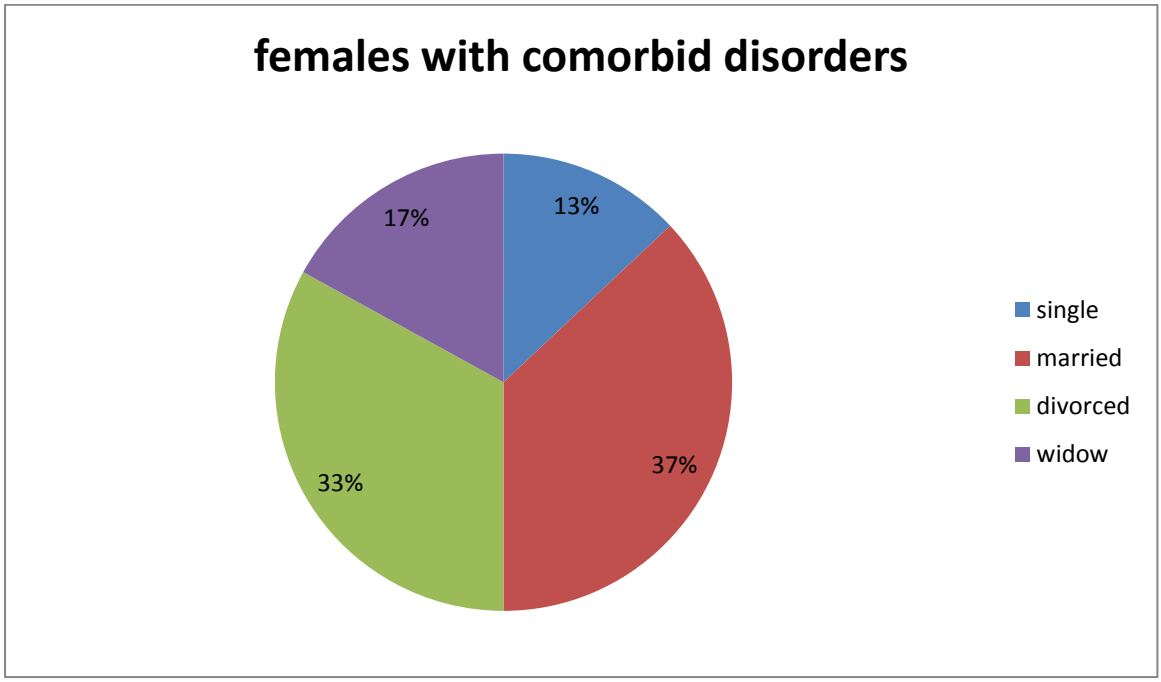
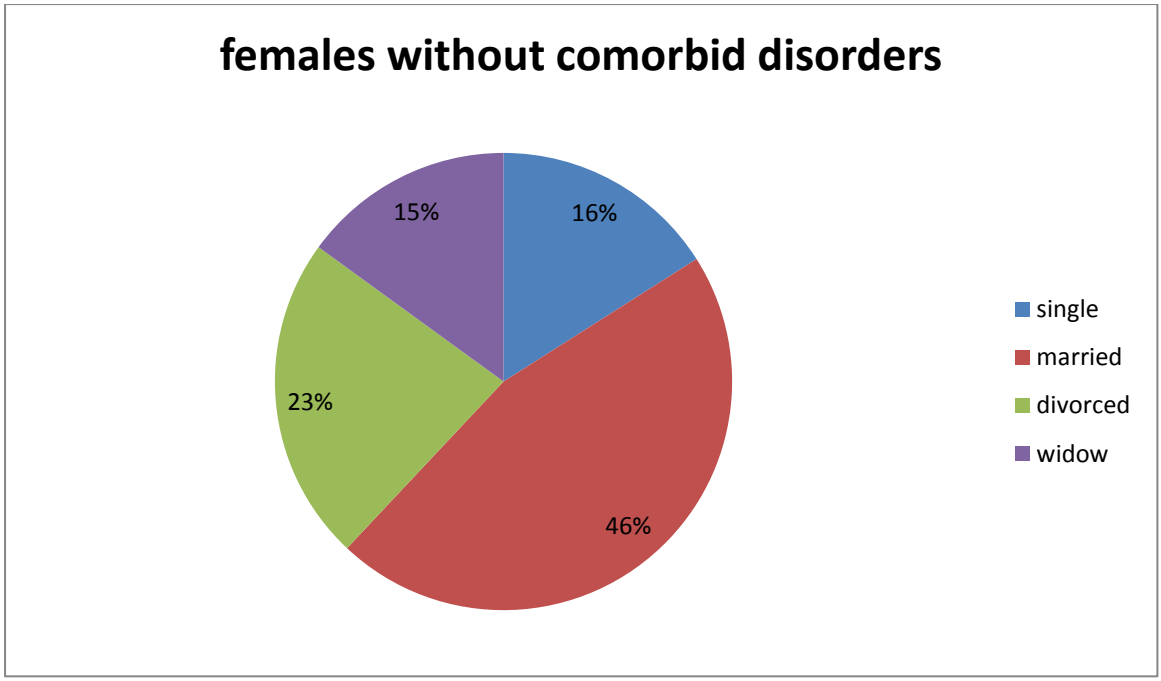
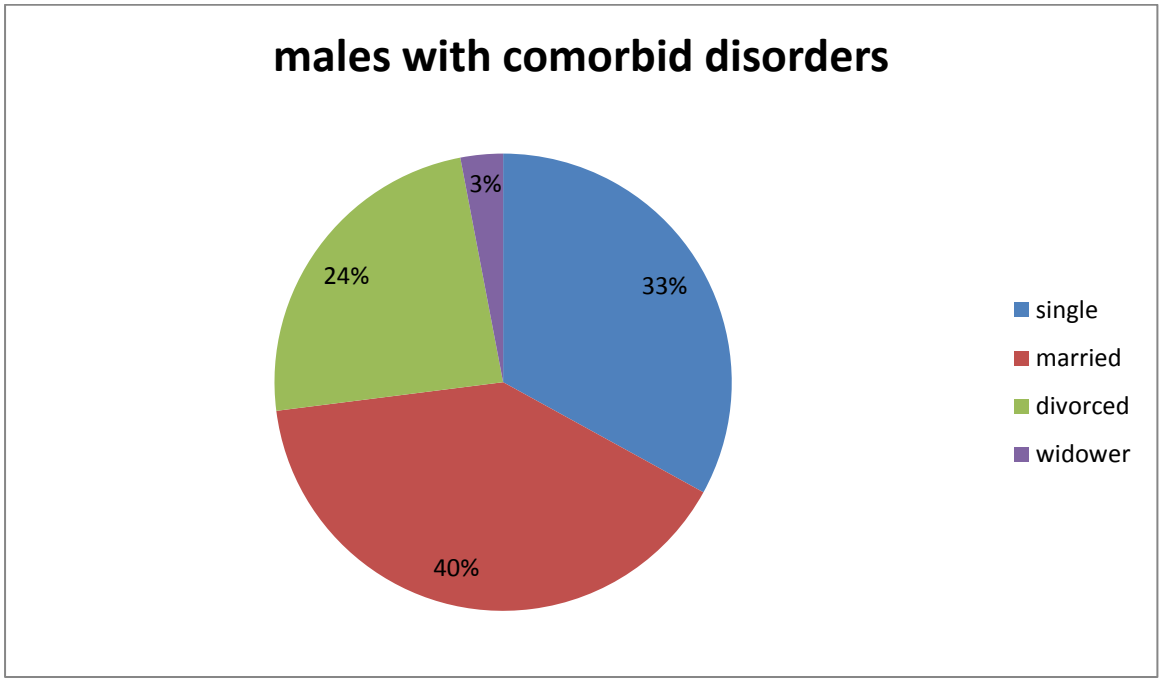


Figure 21: Relationship status of males and females with and without comorbid disorders




females without comorbid disorders
16%
46%
23%
15%
single
married
divorced
widow


males with comorbid disorders
33%
40%
24%
3%
single
married
divorced
widower

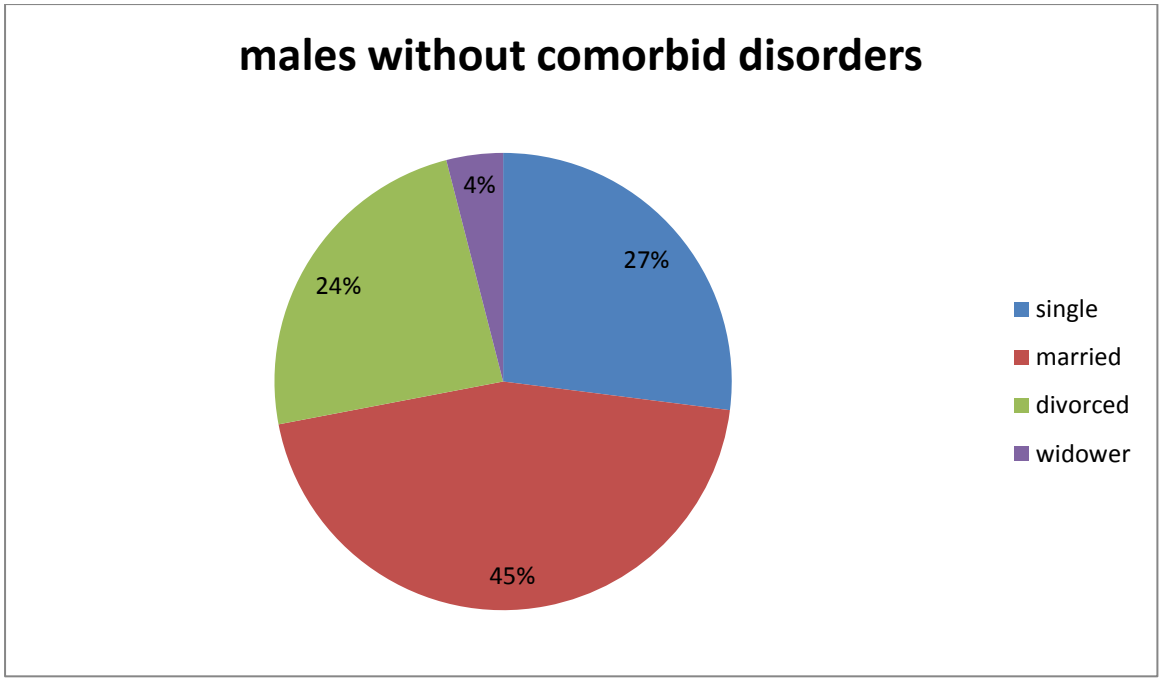

males without comorbid disorders
4%
27%
24%
45%
single
married
divorced
widower

Figure 22: Highest level of education of pathological gamblers

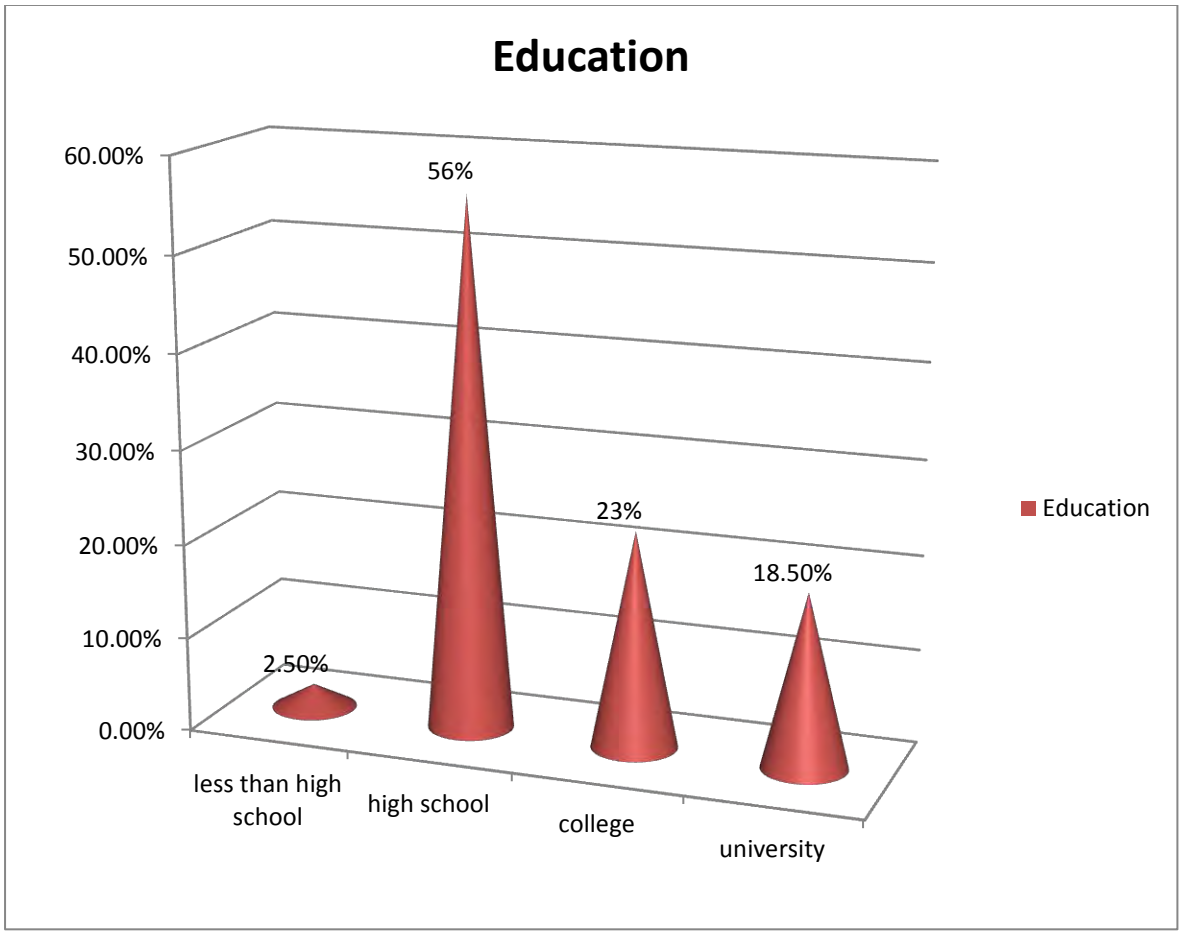


Figure 23: Highest level of education of males and females with comorbid disorders

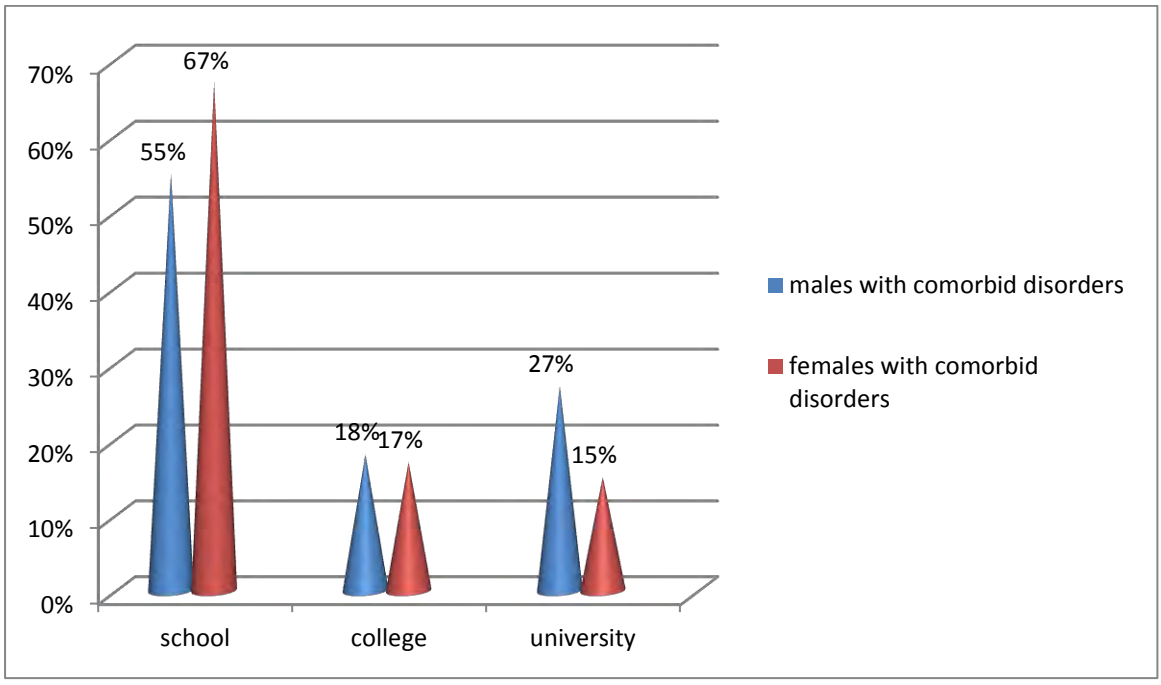


Figure 24: Employment status of pathological gamblers

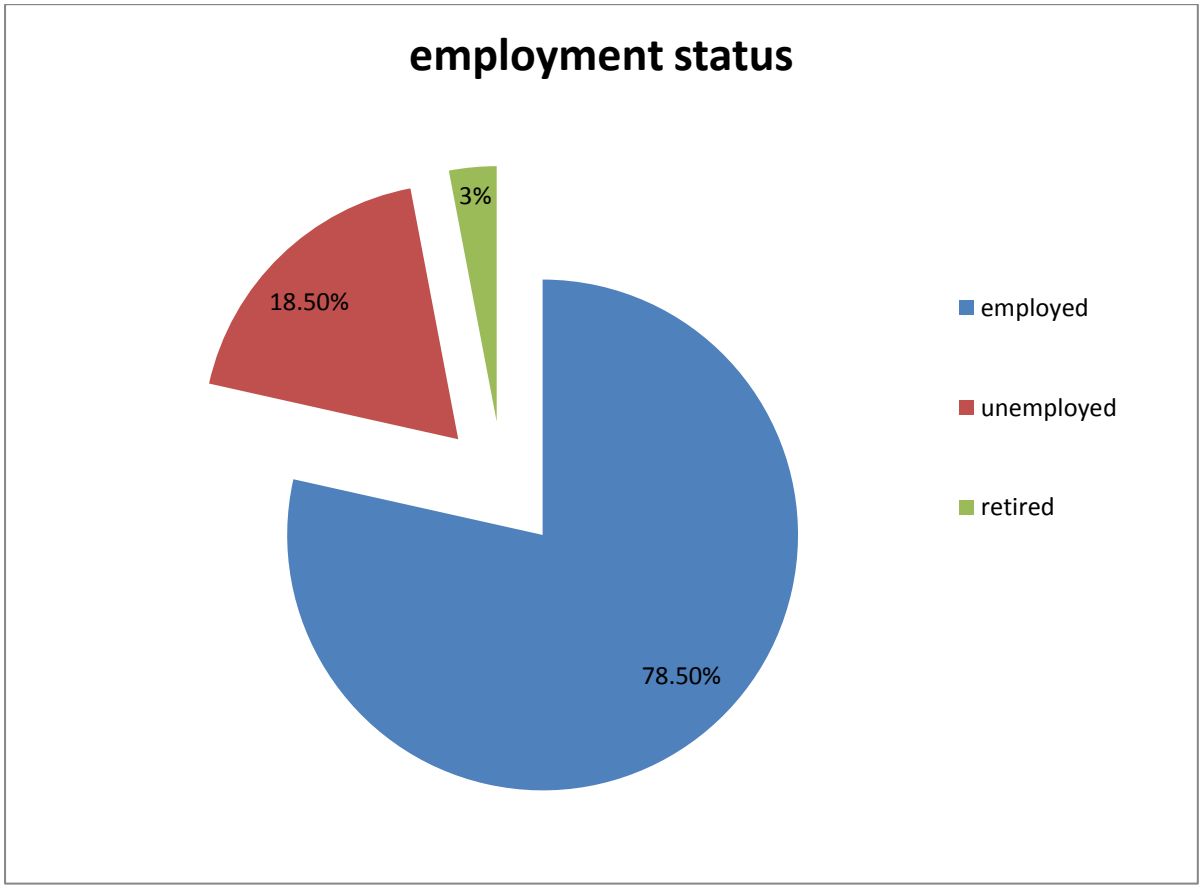


Figure 25: Race distribution of pathological gamblers

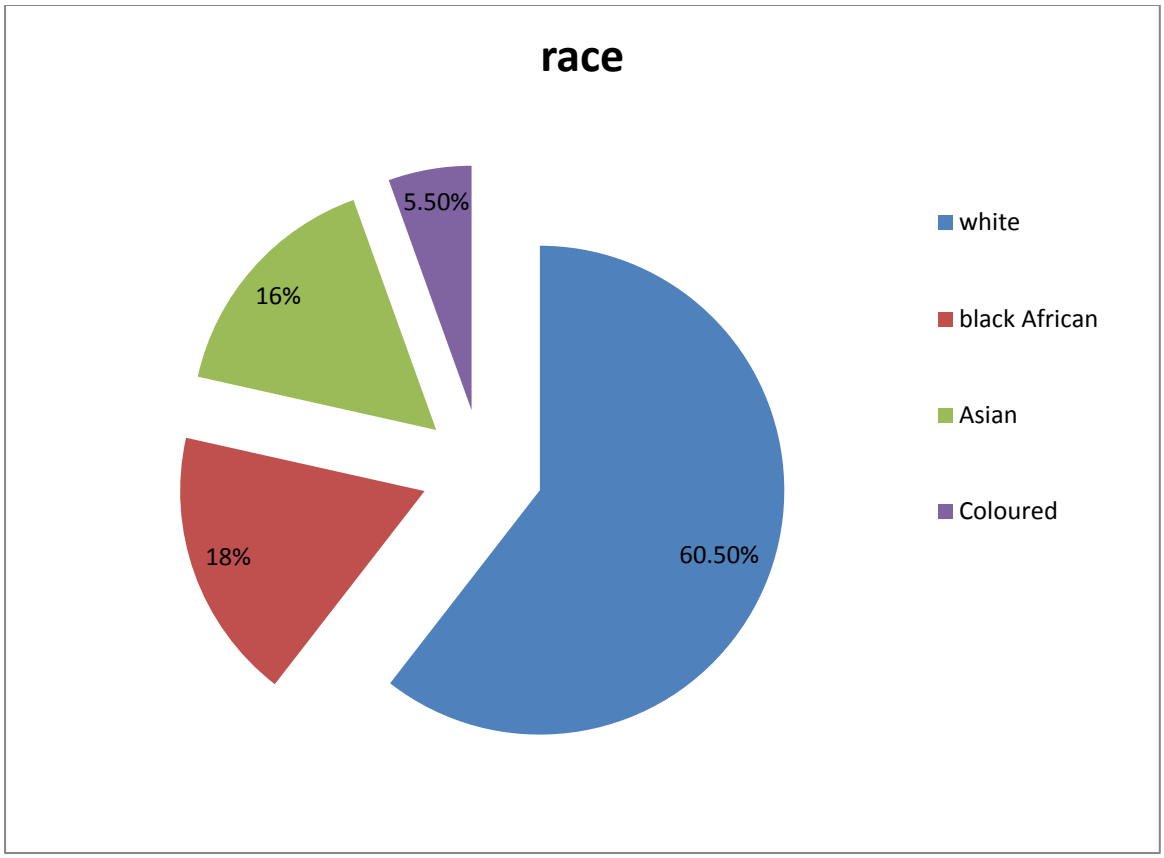


Figure 26: Preferred gambling activity of pathological gamblers

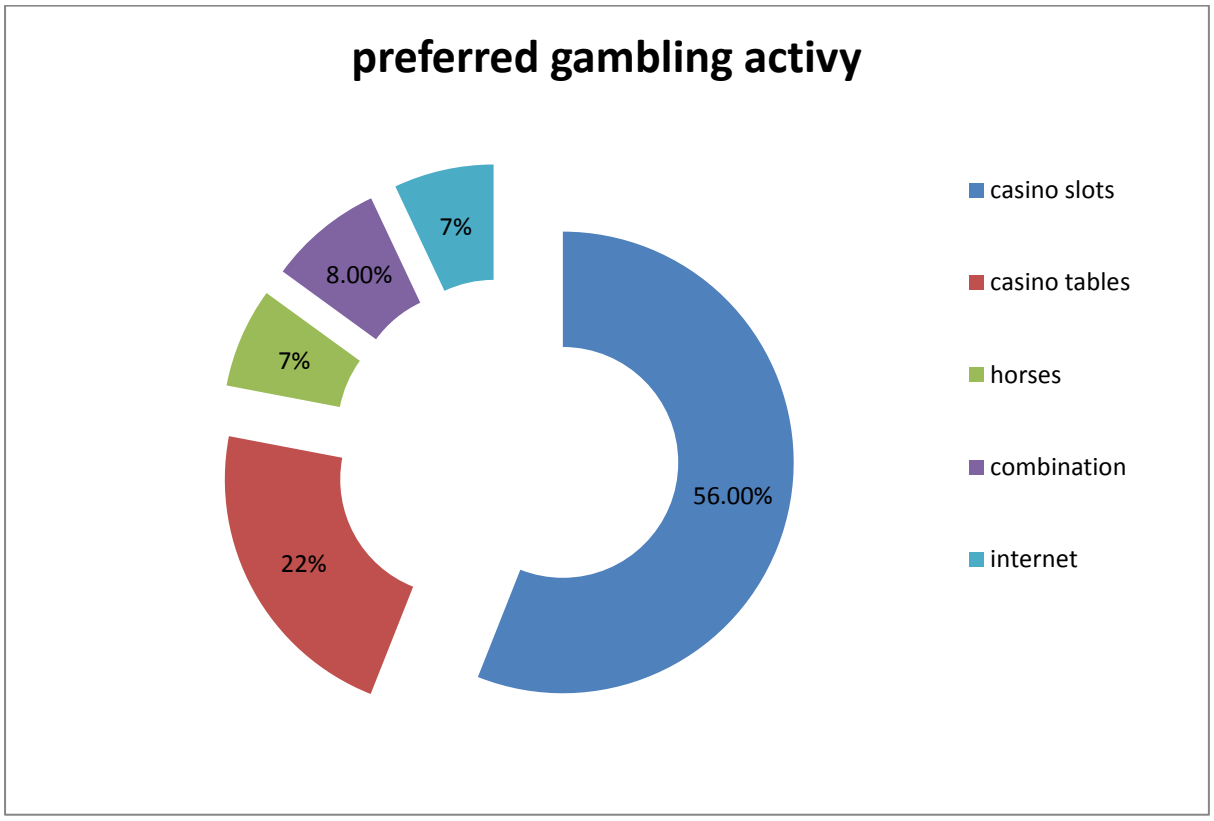


Figure 27: Gambling preference of male and female pathological gamblers

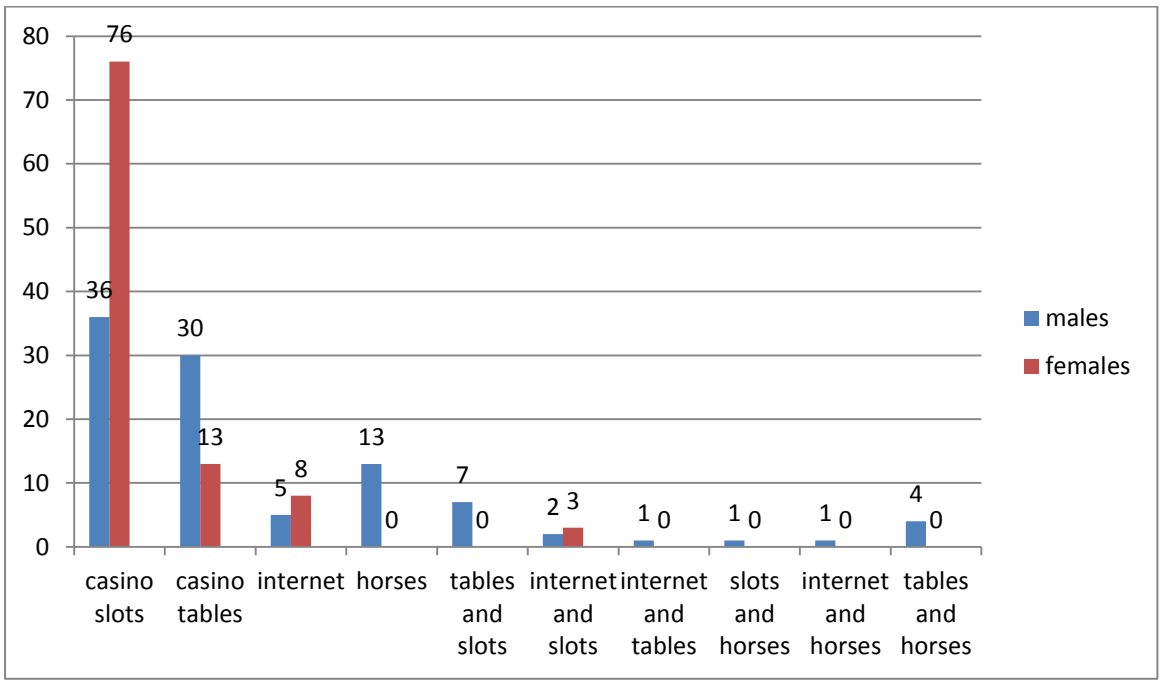
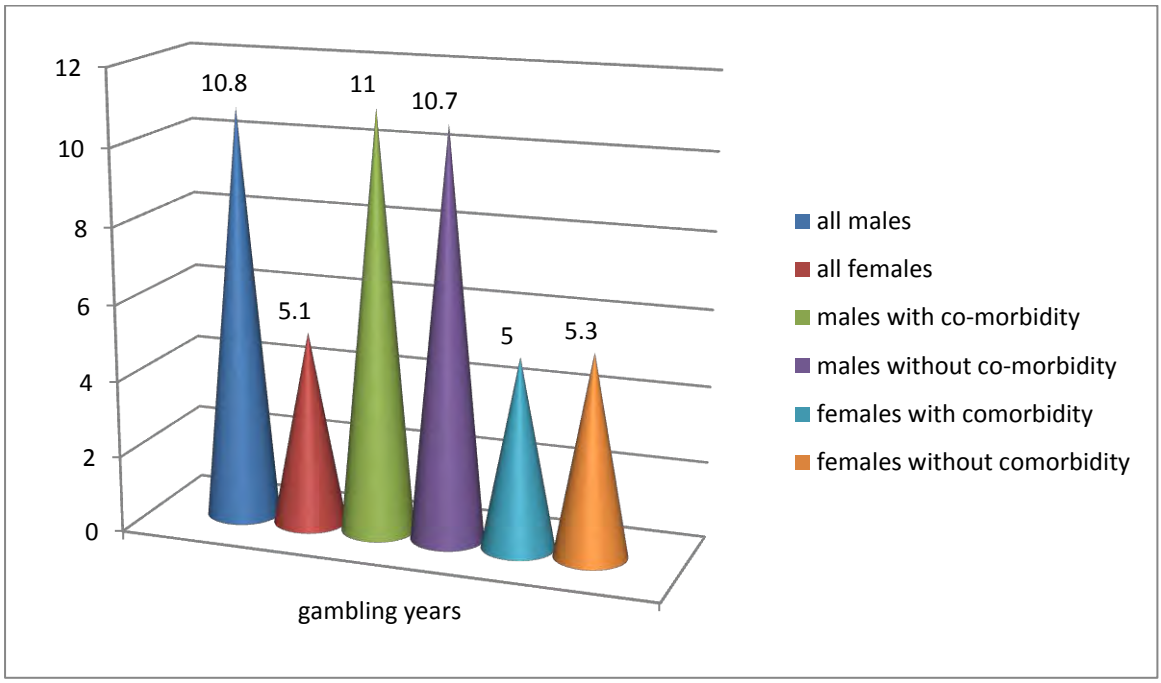


Figure 28: gambling years of treatment seeking pathological gamblers



PSYCHIATRIC COMORBIDITY

83 individuals (41.5%) met DSM-IV criteria for a current comorbid axis one psychiatric disorder. The most common current disorders included major depressive disorder (28%), anxiety disorders (25.5%) and substance use disorders (10.5%). 60 individuals (30%) had one comorbid axis one disorder, 22 (11%) had two comorbid axis one disorders, and 7 (3.5%) had three or more axis one disorders. Lifetime comorbid diagnosis of major depressive disorder was 46%.

Females were significantly more likely to have comorbid major depressive disorder ($\chi 2$ (1) = 9.92, $p<.005$) and generalised anxiety disorder ($\chi 2$ (1) = 9.82, $p<.005$). Based on the odds ratio, females diagnosed with pathological gambling are 2.79 times more likely to suffer from a current major depressive disorder, and 6.16 times more likely to have a diagnosis of generalised anxiety disorder, than males with pathological gambling.

30% of female individuals had a moderate to high risk of committing suicide at the time of the initial assessment as compared to 15% of male individuals who had a moderate to high risk. Suicidal females were more likely to be divorced, unemployed, and have committed an illegal act as a result of their gambling. Suicidal males were more likely to be single or divorced, employed and have a comorbid diagnosis of alcohol misuse or dependence. The average age for suicidal males was 37 years and for suicidal females it was 45 years.

Although more males than females were diagnosed with a substance use disorder, statistical significance was approached but not reached. 52.5% of individuals had tobacco related disorders at the time of the assessment. There was a statistically significant difference between the percentage of female individuals who had tobacco related disorders and comorbid disorders (61%) and females without comorbid disorders (33%). Females without comorbid disorders were less likely to have tobacco related disorders than females with comorbid disorders.

Gender was not associated with panic disorder, and the expected counts for the

remaining diagnoses were too small to evaluate the differences.

The proportion of individuals reporting marked to extreme disability on the SDS was 33%. Male and female gamblers reported that their gambling had the most adverse effect on family and home life. This disability is expected to be associated with reduced productivity and impaired quality of life, emphasizing the significant social burden of pathological gambling.

Statistical analysis indicated that there were no significant correlations between the number of comorbid disorders and the scores obtained on the SCI-PG and SDS (*p*=n.s.).

Table 3: **Psychiatric diagnoses on the M.I.N.I**

	n / Mdn	% of sample
Demographics N=200		
Current major depressive disorder	56	28%
BPAD	8	4%
Any Mood disorder	64	32%
Moderate to High suicide risk at time of M.I.N.I	45	22.5%
Obsessive compulsive disorder	6	3%
Generalised anxiety disorder	19	9.5%
Agoraphobia	2	1%
Panic disorder	14	7%
Social anxiety disorder	3	1.5%
Posttraumatic stress disorder	9	4.5%
Any anxiety disorder (OCD, GAD, Panic disorder, Social anxiety disorder, PTSD	51	25.5%
Anti-social personality disorder	5	2.5%
Eating disorder	1	0.5%
Alcohol dependence	7	3.5%
Drug dependence	6	3%

Alcohol misuse	4	2%
Drug misuse	6	3%
Any substance use disorder (alcohol and drug misuse or dependence	21	10.5%

*SD= standard deviation

Figure 29: Current comorbid disorder and gender distribution

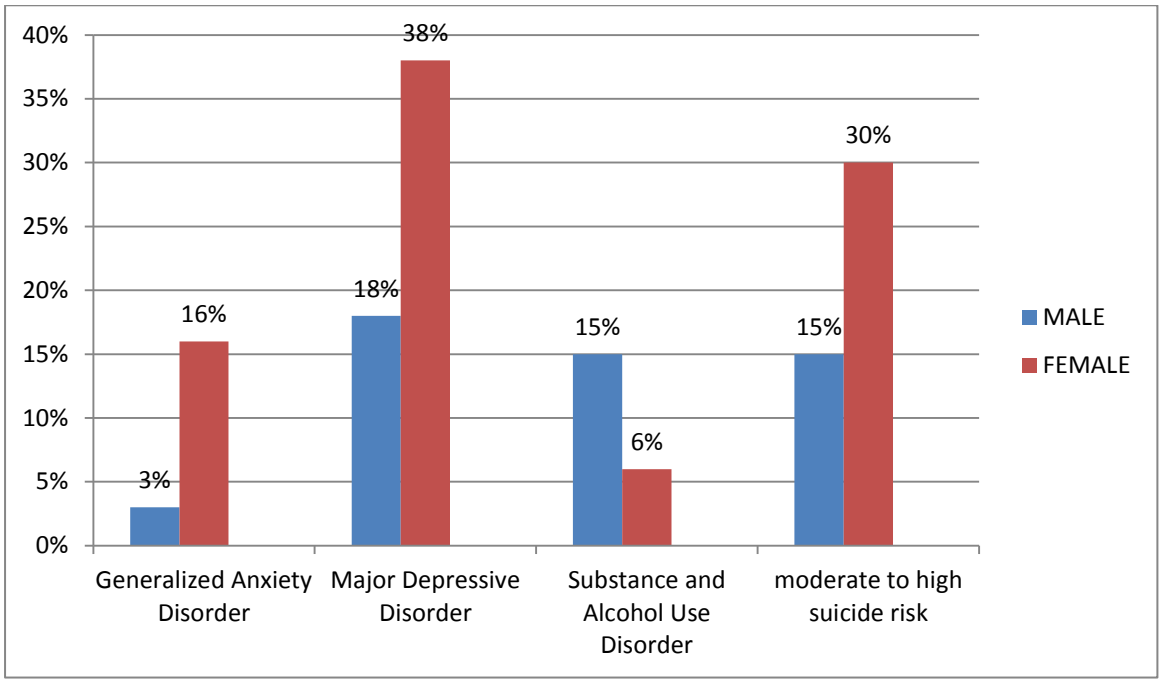


Figure 30: Mood disorders and gender distribution

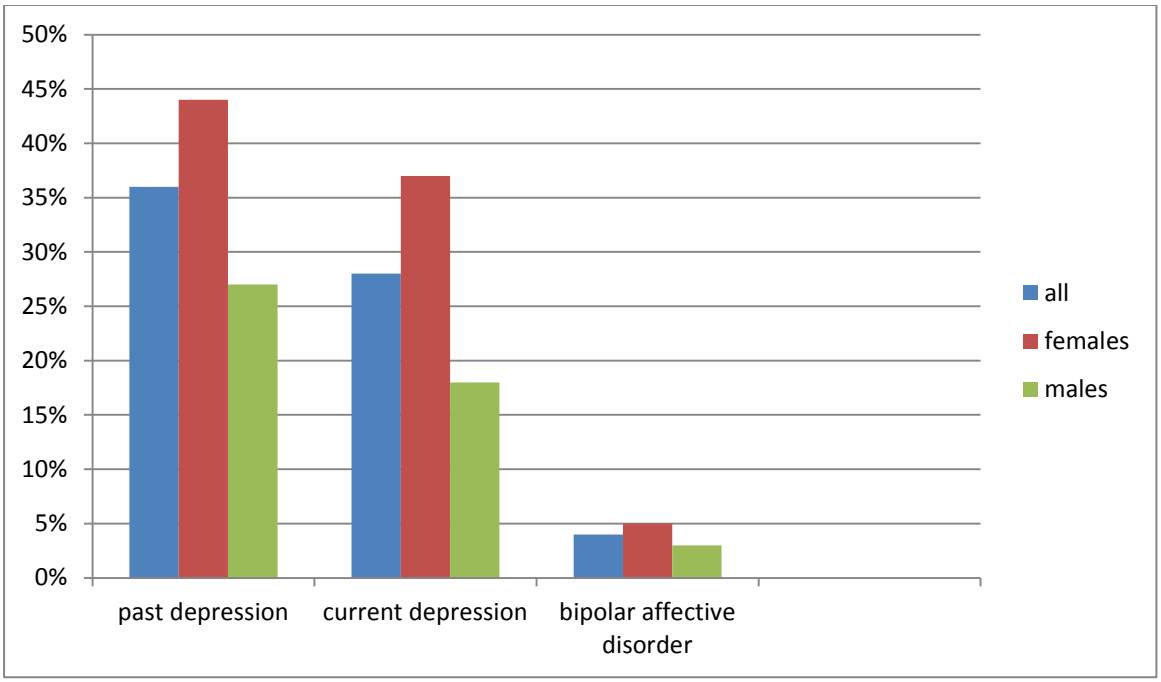


Figure 31: Anxiety disorders and gender distribution

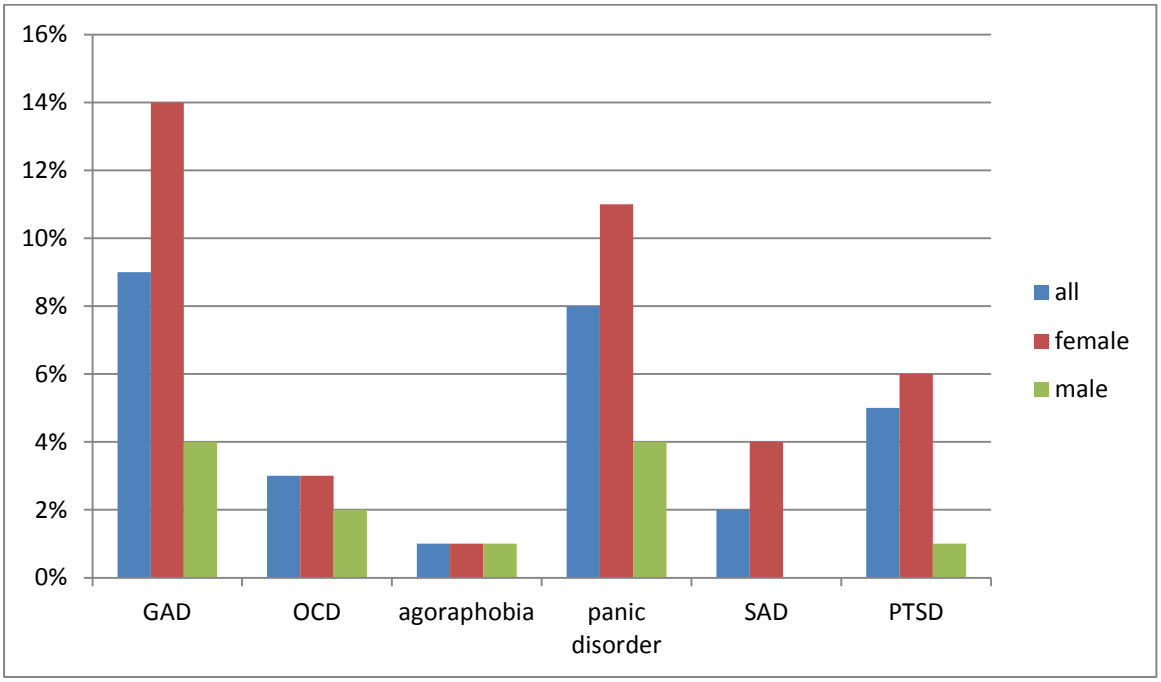


Figure 32: Alcohol and substance use disorders and gender distribution

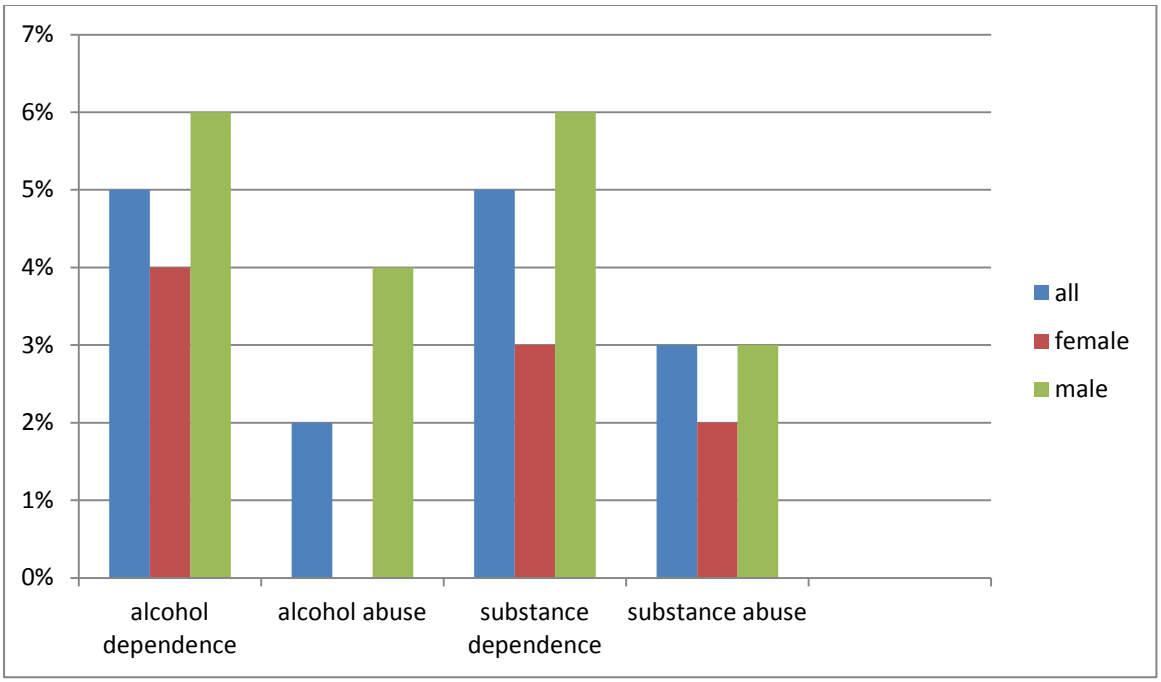


Figure 33: Pathological Gamblers with tobacco related disorders

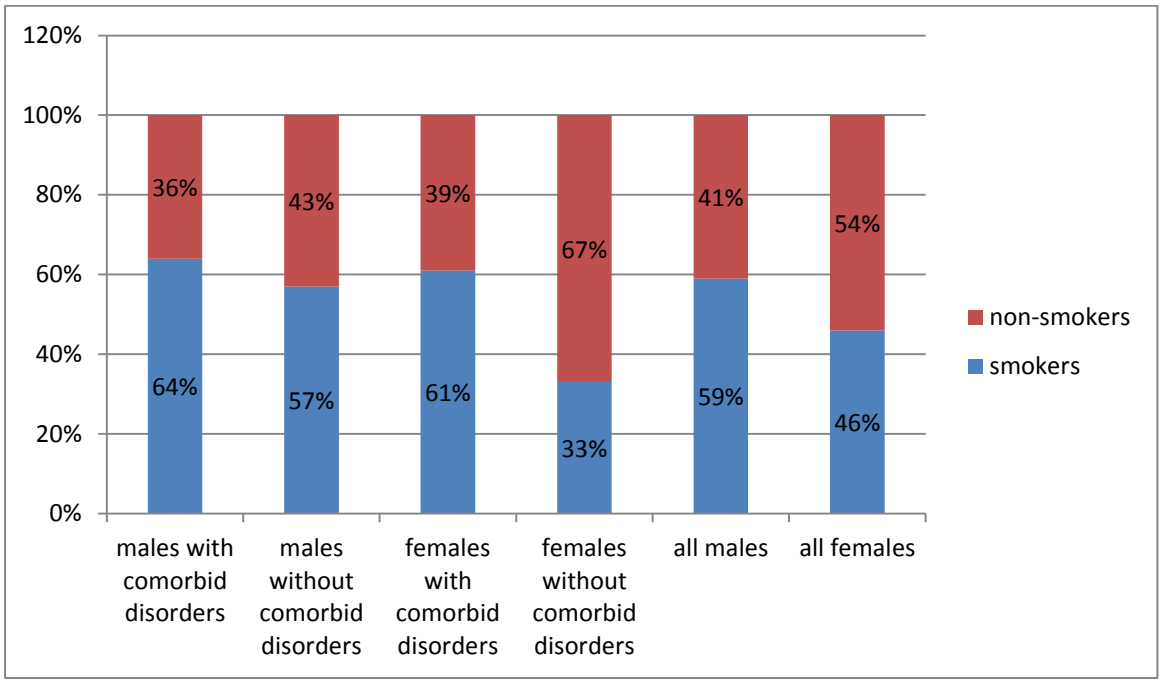


Figure 34: Number of comorbid psychiatric disorders

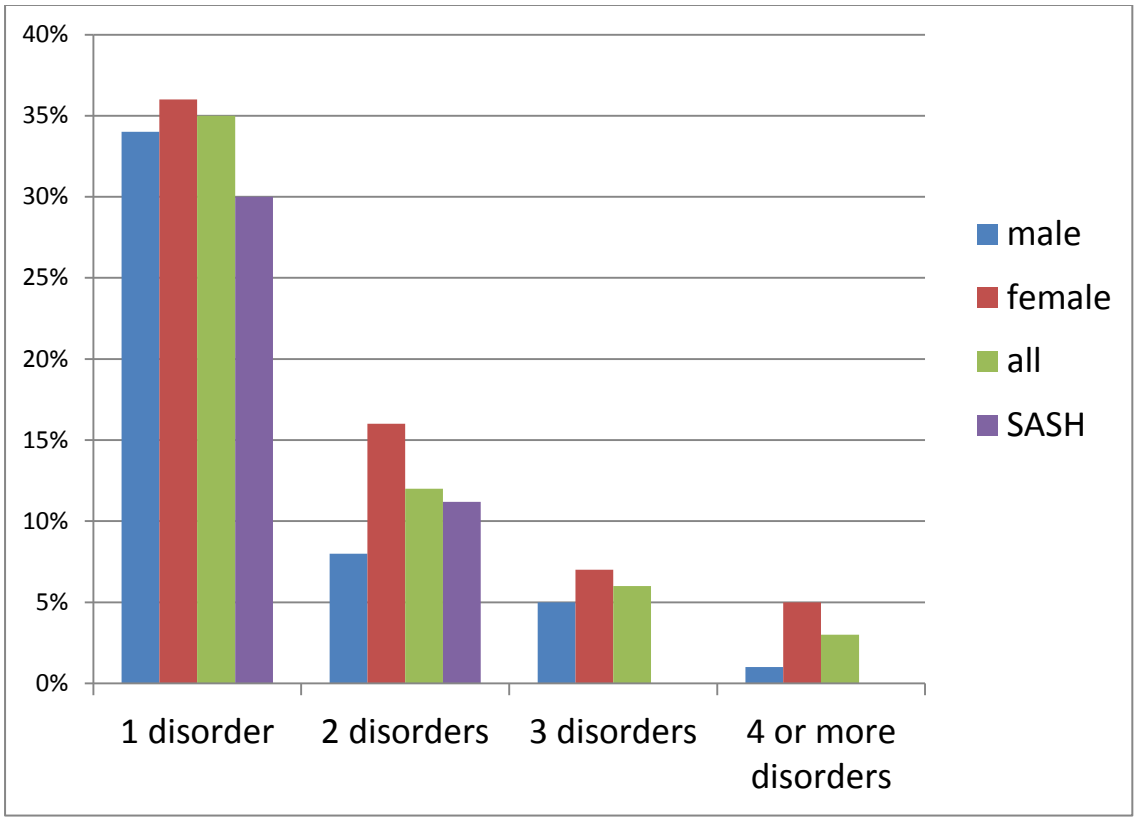


Figure 35: Characteristics of pathological gamblers with moderate to high suicide risk

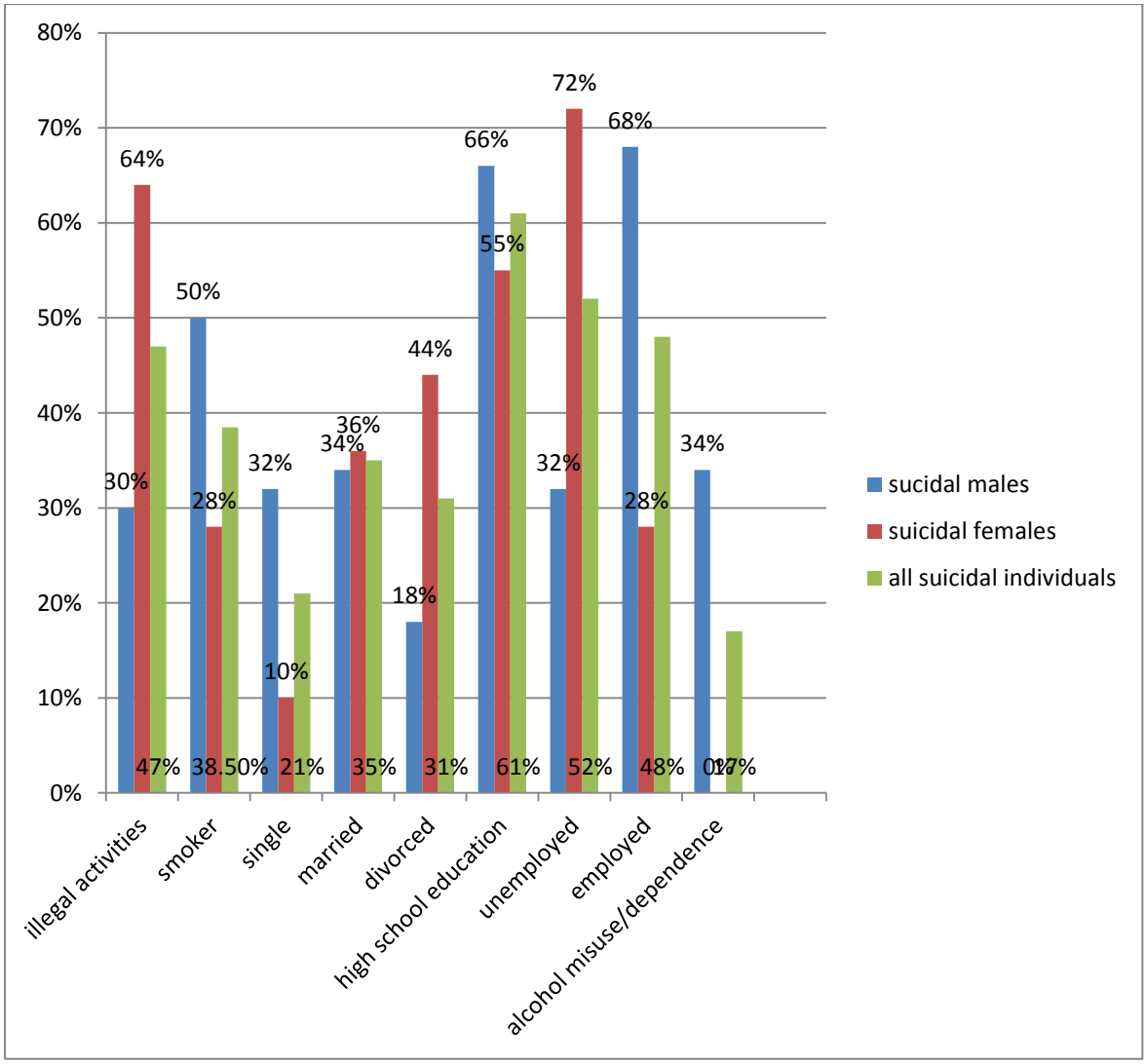


Figure 36: Distribution of Sheehan Disability Scale scores above 20/30

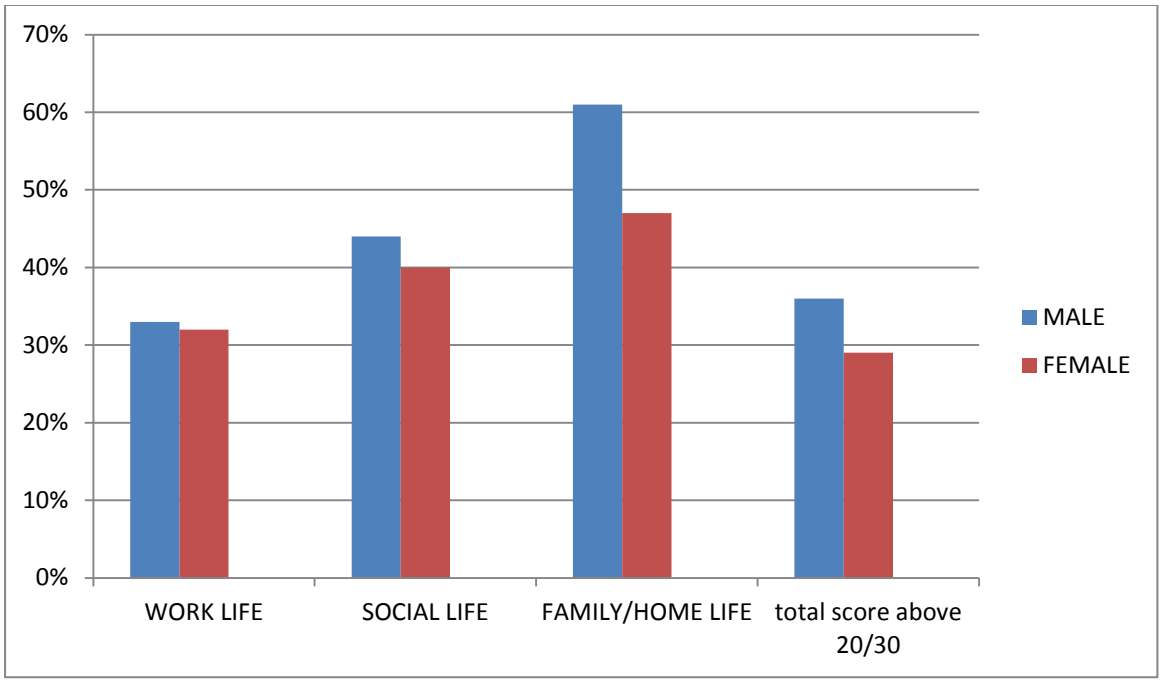
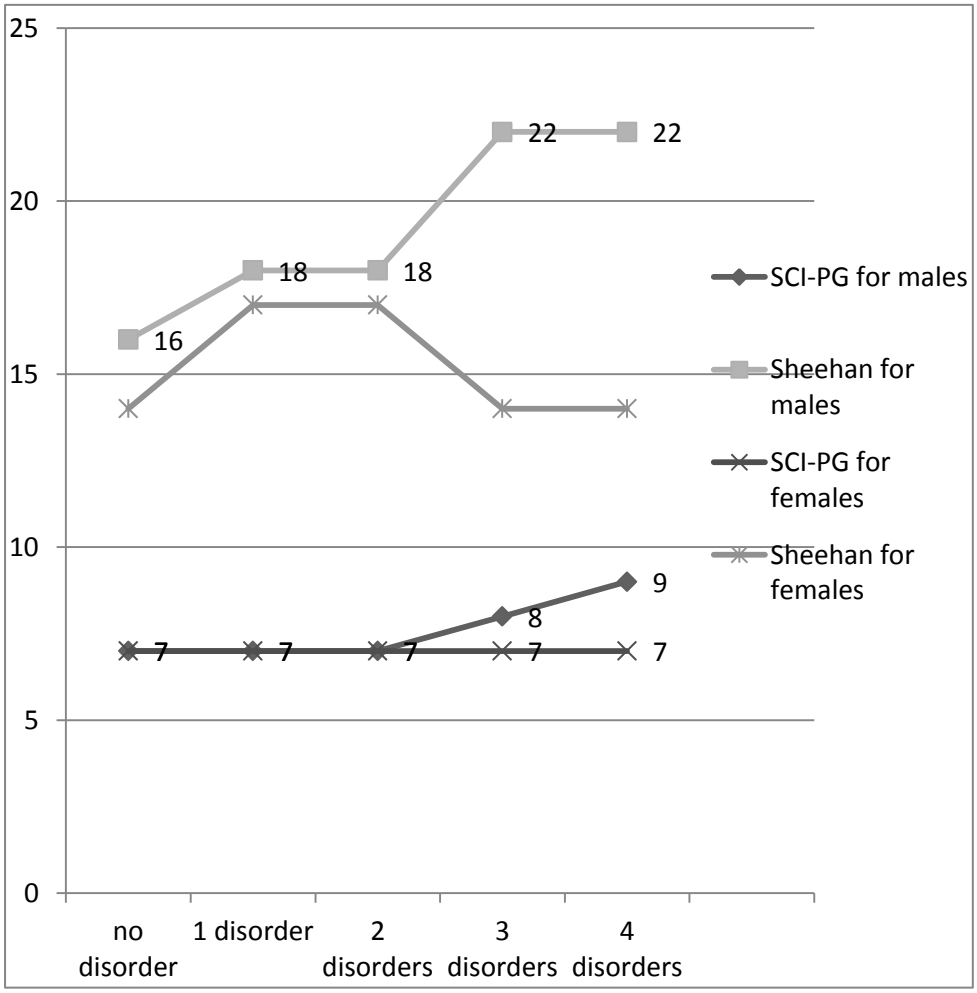


Figure 37: Scores obtained on SCI-PG and Sheehan Disability Scale



CHAPTER FIVE: DISCUSSION

MAIN FINDINGS

The main findings of this study were:

1) there was a high rate and wide range of comorbid psychiatric disorders in our study population
2) and the presence of co-morbid disorders was not associated with more severe gambling behaviour and psychopathology
3) comorbid disorders were more prevalent among male individuals who were not in a committed relationship and in female individuals who were divorced
4) among female individuals, increased age was directly proportional to increased prevalence of comorbid psychiatric disorders, whereas the incidence of comorbid psychiatric disorders among males were the highest in the age group 41-50 years.

CLINICAL PROFILE:

Internationally, treatment seekers are on average between 38 and 42 years old. Most are falling between the ages of 27 and 47 years (Black et al, 1998; Grant et al, 2001; Abait et el, 2007; Lahti et al, 2013). This is consistent with our results.

Research findings have demonstrated that males and females progress towards pathological gambling differently (Potenza et al, 2001; Grant et al, 2002). Females seem to start gambling later in life, then rapidly develop a problem and seek help more quickly. Among this sample of NRGP treatment seeking pathological gamblers, female gamblers on average started gambling 6 years later than the treatment seeking males.

Internationally, males are more likely to engage in strategic activities; gambling on sporting events, the track, blackjack and cards, while females are more likely to gamble in social contexts in games of chance as bingo, slot machines and lottery (Tavares et al,2001; Grant et al, 2002). Within the international gambling population females typically engage in fewer types of gambling. Our results correlated with these findings: the female gamblers in our sample gravitated towards fewer types of

gambling, they preferred to gamble on slot machines in casinos. In South-Africa, females' preference for particular types of gambling may be related to the location of the games. It might be that females are more likely to gamble in casinos, where they feel safe.

It is known that pathological gamblers commit illegal acts to maintain their gambling activity. Epidemiological studies from the USA have reported that 14 to 19 % of pathological gamblers are involved in illegal activities as a result of gambling (Barry et al, 2008). Although 34, 5 % of our participants committed illegal acts as a result of their gambling, only 12 % of our participants' primary motivation to seek help was as a result of concerns about illegal activities. Among the illegal activities mentioned by the participants, the following stood out: fraudulent loans, embezzlement and counterfeit checks. The high incidence of involvement in illegal activities might also be due to the police and probation services' knowledge of the NRGP treatment programme, and therefore more referrals might come from them. Among the female individuals who had a moderate to high suicidal risk, 64% of them had been involved in illegal activities as a result of their gambling. This is more than double the percentage of male individuals who had a moderate to high suicidal risk and had been involved in illegal activities. International literature has also shown that pathological gamblers' involvement in illegal activities frequently only appear at high levels of pathological gambling (Potenza et al, 2000; Shaffer et al, 2011).

Regarding marital status, compared with those without current comorbid psychiatric disorders, those with current comorbid psychiatric disorders had a significantly lower portion of married status, but a greater proportion of being single, divorced or widowed. This result is consistent with several international studies.

COMORBID PSYCHIATRIC DISORDERS:

83 individuals (41.5%) met DSM-IV criteria for at least one current axis one comorbid psychiatric disorder. This is in keeping with Shek et al who found that 44% of Singaporean treatment seeking pathological gamblers had at least one comorbid axis one disorder (Shek et al, 2011). Research findings have shown that individuals with comorbid psychiatric disorders had significantly greater severity in gambling problems and psychiatric symptoms, level of impairment in psychosocial functioning

as well as tobacco related problems. We found that the presence of a comorbid psychiatric disorder did not increase the severity in gambling. We are unable to shed light on this inconsistency with previous international studies.

The incidence of any current mood disorder in our sample was 32%. This correlates with the results of Erbas et al, as in their German treatment seeking population of pathological gamblers, 29.4% of the sample had a current mood disorder as a comorbid psychiatric disorder (Erbas et al, 2012).

While the association between pathological gambling in males and depression has been well established in the literature, few studies have conducted analyses using female-specific samples or examining gender differences in the depression associated with pathological gambling. Given that the association between pathological gambling and depression is so well established and that rates of depression in the general population are higher for females than males (American Psychiatric Association, 1994) it is logical to speculate that the finding of inflated rates of depression in male pathological gamblers can be generalised to their female counterparts. Our analyses examining gender differences in the depression associated with pathological gambling support this assertion.

These findings indicate that depression plays an integral role in problem gambling. In fact, nearly all studies investigating the relationship between problem gambling and depression have confirmed the presence of the relationship. It is evident that affective symptomatology and mood disorders are common in pathological gambling, particularly at the point of seeking treatment.

The association between pathological gambling and depression is further illustrated by the high percentage of individuals with moderate to high suicide risks in our sample. 22.5% of our sample had a moderate to high risk of committing suicide. This was slightly lower than the 32% of Petry et al's sample of treament-seeking pathological gamblers who had suicidal ideation (Petry et al, 2001).

Studies on reported suicide attempt rates and suicidal ideation are predominantly on male callers to gambling telephone lines, treatment seeking male pathological gamblers, or Gamblers Anonymous members. Few studies have indicated that it

appears that the rate of suicide ideation and suicide attempts by female pathological gamblers is also comparable or even higher than that of their male counterparts (Specker et al., 1996; Potenza et al., 2001). For example, in Specker's study, suicide ideation was reported in 53% of female outpatient pathological gamblers as compared to 32% of their male counterparts (Specker et al., 1996).

It is clear from this study that South-African pathological gamblers are at an elevated risk of suicide, up to twice that of an average South-African citizen, where suicidal ideation is 9.1%. This suggests that pathological gamblers should routinely be screened for suicide risk (Myer et al, 2008).

25.5% of our study population had a current anxiety disorder and based on the odds ratio, females diagnosed with pathological gambling were 6.16 times more likely to have a diagnosis of generalised anxiety disorder, than males with pathological gambling. The interpretation of this result is fraught with difficulty as potential confounding factors produced by concomitant substance use, such as combining nicotine and caffeine was not controlled for. Nevertheless, our relatively high percentage of current anxiety disorders corroborate earlier clinical sample studies which have generally found that pathological gamblers seeking treatment have high prevalence rates of current anxiety disorders (Ibanez et al, Black et al, Shek et al, 2011).

Our incidence of current alcohol abuse and dependence was 5.5%. This was low in comparison to Toneatto et al's study in Canada, where the incidence was 10.1% and to Abait's study in Argentina, where the incidence was 12.6% (Toneatto et al, 2002; Abait et al, 2007). The result was, however, in keeping with a recent Spanish study by Echeburua et al, where they found that alcohol abuse was not higher among pathological gamblers when compared to non-gamblers (Echeburua et al, 2013).

Although most international studies found evidence for a positive relationship between tobacco related disorders and pathological gambling, the results from these studies were nowhere near consistent. Arguably, geography might help to explain this discrepancy. Grant et al found that 41.4% of pathological gamblers in their American sample met criteria for current tobacco related disorders (Grant et al, 2002). Potenza et al (2008 – USA) found little difference in smoking rates between

men and women with pathological gambling (female: 43%.; male: 44%). The results from our female pathological gamblers correlate with these results from the USA as 46% of all female individuals in our study had tobacco related disorders during the time of their initial assessment. More male individuals (59%) in our study had tobacco related disorders as compared to their American counterparts.

Our study is unable to shed light on causality, but the high prevalence of mood and anxiety disorders and, tobacco-related disorders, suggest that those disorders may be nosologically related either by predisposing to one another or by sharing common neurobiological mechanisms. In contrast, we did not find many individuals with obsessive-compulsive disorder, suggesting that their link with pathological gambling may be weaker than has been reported (Hodgins et al 2012).

Despite limited international data, it would appear that a small but significant subset of pathological gamblers probably have a comorbid antisocial personality disorder. In our sample, 2.2% of the individuals qualified for a diagnosis of antisocial personality disorder. This is lower than what Blaszczynski et al found when they studied 109 Australian pathological gamblers who were seeking treatment or in GA (Blaszczynski et al, 1989). They found that 14.6% of the individuals qualified for a diagnosis of antisocial personality disorder. Further replication of our findings and expansion on them would be useful as individuals with this comorbidity might have a different course and prognosis.

According to the SASH study, the lifetime prevalence estimate of any one psychiatric disorder was 30%, with 11% of respondents having two and 3.5% having three or more psychiatric disorders (Myer et al, 2008). The prevalence of having one or more psychiatric disorder was higher among our treatment seeking pathological gamblers than in the general population South-African.

Pathological gambling is frequently treated in specialized clinics and although some psychiatric disorders might be viewed as risk factors for pathological gambling, while others as consequences of pathological gambling, there is always the risk that treatment may focus on gambling alone. This study's findings underscore the need to conduct comprehensive evaluations of individuals with pathological gambling and

to devise treatment plans that appropriately address their comorbid illnesses whilst also addressing the gambling problem. The findings also enhance our understanding of the characteristics of treatment-seeking males and females with pathological gambling in South-Africa.

LIMITATIONS AND STRENGHTS

Several limitations should be emphasized.

First, the data might be confounded by mood symptoms attributable to life crises surrounding entry into treatment.

Second, the study is limited by its cross-sectional nature, the lack of additional comparison groups (e.g., subjects with a primary diagnosis of substance abuse disorders), and the absence of data on treatment outcome.

Third, given the low rates of substance use disorders, we suspect that response bias well may have been present.

Fourth, our sample had limited racial diversity.

Fifth, only treatment-seeking individuals were included in the study, so the findings may not generalize well to individuals who do not seek treatment. In addition, participants were recruited from one program across the country and program-specific factors may have influenced the sample.

Sixth, other impulse control disorders and ADHD were not included in the MINI. These might be important based on previous literature. (Petry et al. 2005).

Despite the limitations, the study has several strengths. Most importantly, because individuals were referred as part of a nation-wide treatment program, the current sample may be a better representation of pathological gamblers than previous research done at single sites, as it reflects a large and geographically diverse sample. In addition, the use of objective measures, as well as clinician-administered

and self-report instruments to assess gambling frequency and severity enhance the findings.

Future studies should look at the longitudinal course of pathological gamblers with and without comorbid psychiatric disorders (including diagnosis of new patients with comorbid disorders) and the impact of comorbidity on the rates of retention in and response of patients to treatment. Results from this study lend support to the notion that pathological gamblers present to treatment services with a range of problem areas and treatment needs, many of which appear to be gender-specific. These findings reinforce the need to engage both genders in a manner that will meet their unique needs.

In conclusion our study indicates that in South-Africa, pathological gambling is related to a number of psychiatric comorbidities. The most common comorbidities appear to be affective disorders, anxiety disorders and nicotine dependence.

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APPENDICES

Assessment of NRGP client:

Client/patient name: _____ Date:

_____

Contact number:_____

City/town:_____

Title: Mr._____ Mrs._____ Miss _____ Other_____

First language/home language:_____

Etnicity:_____

Age: _____

Gender: Male _____ Female _____

Marital status: Single _____ Married _____ Separated ____ Divorced _____ Widowed ____

Highest level of education: Primary school____ High school____ College____ University____

Employment status: Employed____ Unemployed____ Pension____ Student____

Occupation: _____

Children:_____How many?_____How old?_____

Accommodation status: Owner____ Renting____ Lives alone____ Lives with family____

In a group home (commune) ____ Shelter____

Spiritual/religious identity:_____

Sexual orientation: Heterosexual_____ Homosexual___ Bisexual_____

Presenting complaint (in client's own words):

_____

_____

_____

Family history of gambling problems: Yes____ No____ If yes, who?_____

Family history of psychiatric disorders: Yes____ No____ If yes, who and what?_____

Family history of alcohol or drug dependence: Yes____ No____ If yes, what and who?_____

_____

Personal history of psychiatric illness: Yes____ No____ If yes, what?

_____

Who made the psychiatric diagnoses? GP_____ Psychiatrist____

On medication for Psychiatric illness: Yes____ No____ If yes, what medication and dose?

_____

_____

History of admission to a psychiatric hospital? Yes____ No _____ If yes, where, when?

_____

_____

History of Physical illness? Yes____ No____ What?

On any medication for a physical illness?

_____

Do you smoke? Yes____ No____ If yes, how many per day? _____

<u>Gambling History (SCI-PG):</u>

How old were you when you started to gamble? _ When did your gambling become a problem? _

What kind of gambling did you do most? (Please circle) casino-tables casino slots private card games low payout machines internet card games internet slots bingo sportsbetting horses other internet dice Ififa iChina lottery

What other gambling do you also do? (Please circle) casino-tables casino slots private card games low payout machines internet card games internet slots bingo sportsbetting horses other internet dice Ififa iChina

lottery

How often do you gamble now? _____

How much money do you typically gamble? _____

When was the last time you gambled? _____

When in your life were you gambling most? _____

How long did that period last? _____

During the time when you were gambling most:

How often were you thinking about gambling?

How much do you think about past gambling experiences?

How often do you imagine or plan future gambling?

How often do you think about getting money to gamble or pay back gambling debts?

Do your thoughts about gambling get in the way of concentration on work, family or other responsibilities?

1.Pre-occupation with gambling: Absent____ Subthreshold____ True____

During the time when you were gambling most, what were the reasons you gambled?

Did you ever gamble to escape problems in your life or to relieve uncomfortable or bad feelings or moods?

How often did this happen?

2. Gambles as a way of relieving a dysphoric mood or as a way of escaping from problems:

Absent____ Subthreshold____ True____

Have you needed to increase the amount of money you gambled in order to get what you sought from gambling?

If 'yes', how large was the increase in money?

If 'no', did you find that when you gambled the same amount it had much less effect than before?

3. Needs to gamble with increasing amount of money to achieve the desired excitement:

Absent____ Subthreshold____ True____

When you have lost money gambling, have you ever chased after your losses? In other words, have you ever returned to try to get even?

4. After losing money gambling, often returns another day to get even:

Absent____ Subthreshold_____ True____

Have you ever lied to anyone about gambling such as how long you gambled, or that you were gambling at all?

To whom did you lie?

How often?

5.Lies to conceal the extent of involvement with gambling:

Absent____ Subthreshold____ Present____

Have you attempted to control your gambling by cutting back or stopping?

If 'yes'; How many times?

How successful have you been in trying to cut down or stop?

Did you ever stop gambling entirely?

If 'no', did you ever want to stop or cut back?

If 'yes', is this something you have been worrying about?

6.Repeated unsuccessful efforts to control, cut back, or stop gambling.

Absent____ Subthreshold____ True____

Did you experience restlessness or irritability when you tried to cut back or stop gambling?

7. Restless or irritable when attempting to cut down or stop gambling.

Absent____ Subthreshold____ True____

8. Has your gambling caused problems for you in your family, work, or social life to such an extent that you lost or risked losing something or someone important?

Has gambling resulted in any other losses such as damage to your reputation, physical health or mental health?

Absent____ Subthreshold____ True____

Have you ever asked for money or been given money from a family member or

close friend to relieve a desperate financial situation caused by gambling?

9. Relies on others to provide money to relieve a desperate financial situation caused by gambling.

Absent____ Subthreshold____ True____

Have you ever done anything illegal to get money to gamble or to pay gambling debts?

10. Committed illegal acts such as forgery, fraud, theft or embezzlement to finance gambling. Absent____ Subthreshold____ True____

Note for the interviewer: Confirm that the gambling behaviour is not limited to periods when the client experiences a manic episode.

PG-YBOCS:

1: How much of your time is occupied by urges/thoughts related to gambling and/or gambling-related activities?

0 = None

1 = Mild (less than 1 hr/day), or occasional (≤ 8 x/day).

2 = Moderate (1-3 hrs/day), or frequent (≥ 8 x/day).

3 = Severe (>3 = up to 8 hrs/day) or very frequent (>8 x/day & occur most hrs of day).

4 = Extreme (> 8 hrs/day), or near constant (too numerous to count and an hour rarely passes w/o several such occurring).

2: How much do your urges/thoughts interfere with your social or work functioning?

0 = None

1 = Mild, slight interference with social or occupational activity but overall performance not impaired.

2 = Moderate, definite interference with social or occupational performance, but manageable.

3 = Severe, causes substantial impairment in social or occupational performance.

4 = Extreme, incapacitating.

3: How much distress do your urges/thoughts about gambling cause you?

0 = None

1 = Mild, infrequent, and not too disturbing.

2 = Moderate, frequent, & disturbing, but still manageable.

3 = Severe, very frequent, and very disturbing.

4 = Extreme, near constant, and disabling distress.

4. How much of an effort do you make to resist these urges/thoughts? How often do you try to disregard them?

0= Makes effort to always resist, symptoms so minimal doesn't need to actively resist.

1 = Tries to resist most of the time.

2 = Makes some effort to resist.

3 = Yields to all such urges/ thoughts without attempting to control them, but does so with some reluctance.

4 = Completely and willingly yields to all such urges/ thoughts.

5. How much control do you have over urges/thoughts about gambling? How successful are you in stopping or diverting these urges/thoughts?

0 = Complete control.

1 = Much control, usually able to stop/divert urges/thoughts with some effort & consideration.

2 = Moderate control, sometimes able to stop/divert these urges/thoughts.

3 = Little control, rarely successful in stopping these urges/thoughts, can only divert attention with difficulty.

4 = No control, experienced as completely involuntary, rarely able to even momentarily divert urges/thoughts.

6. How much time do you spend in activities related to gambling?

0 = None

1 = Mild (spends less than 1 hr/day in these activities, or occasional involvement in these activities (≤ 8 times/day).

2 = Moderate (1-3 hrs/day) or > 8 times/day, but most hours are free of such activities.

3 = Severe (spends > 3 and up to 8 hrs/day), or very frequent involvement (> 8 times/day and activities performed most hours of the day).

4=Extreme (spends more than8 hours a day in these activities) or near constant

involvement.

7. How much do the above activities interfere with you social/work (or role) functioning? Is there anything that you don't do because of them?

0 = None.

1 = Mild, slight interference with social or occupational activities, but overall performance not impaired.

2 = Moderate, definite interference with social/occupational performance, but still manageable.

3 = Severe, causes substantial impairment in social/occupational performance.

4 = Extreme, incapacitating.

8. How would you feel if prevented from performing these activities? How anxious would you become?

0 = None.

1 = Mild, only slightly anxious if behavior prevented, or only slight anxiety during the behavior.

2 = Moderate, reports that anxiety would mount but remains manageable if behavior is prevented, or that anxiety increases but remains manageable during such behaviors.

3 = Severe, prominent and very disturbing increase in anxiety if behavior is interrupted, or prominent and very disturbing increase in anxiety during the behavior.

4 = Extreme, incapacitating anxiety from any intervention aimed at modifying activity or incapacitating anxiety develops during behaviour related to gambling.

9. How much of an effort do you make to resist these activities?

0 = Makes an effort to always resist, or symptoms so minimal doesn't need to actively resist

1 = Tries to resist most of the time

2 = Makes some effort to resist.

3 = Yields to almost all of these behaviors without attempting to control them, but does so with some reluctance.

4=completely and willingly yields to all behaviours related to gambling.

10. How strong is the drive to gamble? How much control do you have over the behaviors associated with gambling-related activities?

0 = Complete control.

1 = Much control, experiences pressure to gamble, but usually able to exercise voluntary control over it.

2 = Moderate control, strong pressure to gamble, must be carried to completion, can only delay with difficulty.

3 = Little control, very strong drive to gamble, must be carried to completion, can only delay with difficulty,

4 = No control, drive to gamble experienced as completely involuntary & overpowering, rarely able to even momentarily delay gambling activity

Gambling urge/thought subtotal(Q1-Q5):_____

Gambling behaviour subtotal (Q6-Q10):_____ Overall total:____

SHEEHAN DISABILITY QUESTIONNAIRE: (completed by client/patient):

Please circle the number that best describes the way you have felt over the **past month**

Work

These symptoms have disrupted your work

Not at all Mildly Moderately Markedly Extremely

0 1 2 3 4 5 6 7 8 9 10

Social Life

These symptoms have disrupted your social life

Not at all Mildly Moderately Markedly Extremely

0 1 2 3 4 5 6 7 8 9 10

Family life/Home responsibilities

These symptoms have disrupted your family life/home responsibilities

Not at all Mildly Moderately Markedly Extremely

0 1 2 3 4 5 6 7 8 9 10

Informed Consent Document

The National Responsible Gambling Programme (NRGP), who provides free treatment to problem gamblers, together with the Department of Psychiatry and Mental Health at the University of Cape Town, have embarked on a research study to collect information about problem gamblers who seek help through the NRGP Counselling Line.

Please read through the following questions and their answers very carefully. After you have read through this document, please comment on whether you understood everything written in it, and sign where indicated. If you have any further questions or concerns, please feel free to contact us:

Professor Dan Stein	
Department of Psychiatry and Mental Health	
Tel: 021-404 2174 / Fax: 021-448 8158	
J-Block, Groote Schuur Hospital Observatory, Cape Town	

Why is this research being done – what is it trying to find out?

This research is being done to find out more about people with problem gambling. In particular, we are interested in knowing whether people with problem gambling have other mental health problems (such as depression or anxiety conditions). We are also interested to know more about the problem gambling itself (e.g. what kinds of gambling people do and where).

Why are you being invited to take part?

You are being invited to take part because you have contacted the NRGP Counselling Line and were referred for treatment as part of our programme or were referred to our Department for evaluation of problem gambling.

How long will you take part in this research – how much of your time will be needed – will you need to take time off work?

The first 2 sessions of your treatment programme will consist of an assessment which is part of normal clinical practice and which helps the psychologist/social worker to gain a deeper understanding of your problem gambling as well as to plan your treatment programme. The results of this assessment will be forwarded to the psychiatrist at UCT.

You could also be asked to participate in a telephone interview conducted by a psychiatrist that usually lasts one hour, but that may last up to two hours. We will try to do this at a time that is convenient for you.

What procedures, drugs or other treatments are involved in this research?

This research involves answering specific questions about your gambling habits, and other feelings you might have surrounding it. All these questions will be asked by a mental health clinician or professional (eg psychiatrist, psychologist or social worker). There are **no drugs involved** in this research.

What are the risks and discomforts of taking part in this research?

There are **no risks involved** in this study. All information you give us is kept **very strictly confidential**. At no point will your name be linked to specific answers. Although some questions may be uncomfortable for some people (eg questions about the nature of the gambling), we have found that most people are glad for the opportunity to talk about issues such as problem gambling with a mental health clinician.

Are there any benefits to you if you take part in this research?

There **are no direct benefits to you** although the information gathered from the work may be useful in providing appropriate treatment or referral.

What other choices do you have?

We can refer you to a treatment professional.

What happens if you do not want to take part in this research?

Nothing. It is **your right not to take part** in the research, **or** to **withdraw at any time** during the research **with no consequence to you whatsoever**.

What happens at the end of this research?

At the end of the interview process, based on the information provided, the mental health clinician/ professional who is doing the interview will be able to advise you on appropriate treatment for your problem gambling or will give you advice about other

necessary referrals to address particular issues . When the research ends, the findings of the study will be published in a scientific journal (**your name will not be mentioned**)

……
…….

Having read through all the questions and answers, please comment on whether you understand everything written in it, if not then please comment on what you did not understand, or any concerns that you might have:

_____
_____
_____
_____

Full names and surname (Please Print):

_____

Signature: Date:

_____ _____DD/MM/YYY