A STUDY INVESTIGATING THE PREVALENCE OF ERECTILE DYSFUNCTION IN A PRIMARY HEALTH CARE CLINIC IN KWAZULU -NATAL.

CENTRE: Addington Hospital - Primary Health Care Clinic.

Submitted to:

NELSON R. MANDELA SCHOOL OF MEDICINE

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Master of Family Medicine

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DECLARATION

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LIST OF TABLES.

LIST OF FIGURES

ABSTRACT

Introduction: Erectile dysfunction, the persistent inability to achieve and maintain an erection sufficient to permit satisfactory sexual performance, is a common problem.

Aim: To determine the prevalence of erectile dysfunction among men attending a primary health care clinic in Kwazulu-Natal and to determine the association between erectile dysfunction and age, smoking, economic status and co-morbid conditions.

Method: An analytic, quantitative, cross-sectional study was conducted on a group of men attending the Primary Health Care clinic at Addington Hospital. The information was obtained using a structured questionnaire (IIEF15) which had already being validated. The questionnaire was self administered at the time of attending the clinic. Statistical analyses using Pearson Chi square, Mann Whitney and Kruskal-Wallis tests determined the statistical significance of the results.

Results: A total of 1300 randomly selected men participated in the study of which 803 were eligible for analysis. The overall prevalence rate for erectile dysfunction was 64.9% (621) with 14.6% (117) having mild erectile dysfunction, 19.9% (160) moderate erectile dysfunction and 30.4% (244) severe erectile dysfunction. There was a strong association between erectile dysfunction and age, economic status and co-morbid conditions. ($p<0.01$)

Discussion: The prevalence of erectile dysfunction in the urban primary health clinic was high. The results indicate that the condition is a common problem and that primary care physicians need to become aware of the condition. The awareness will result in improved assessment and offer of appropriate treatment that will only enhance the quality of life of patients. Furthermore, the strong association of erectile dysfunction with co-morbid conditions will serve as a predictor for undiagnosed medical conditions which would have otherwise not being detected.

Conclusion: The prevalence of erectile dysfunction in a primary health centre was high and there is a statistically significant association with co-morbid conditions. Further epidemiological studies in the general population focussing on the incidence of erectile dysfunction are recommended.

1. CHAPTER I: INTRODUCTION

1.1 . BACKGROUND

Erectile dysfunction(ED), defined as the persistent inability to achieve and maintain an erection sufficient to permit satisfactory sexual performance, is an extremely common problem.[1,2] The Massachusetts Male Aging Study(MMAS), a community based, random sample observational survey of non-institutionalised men, indicated that up to 52% of the male study population aged 40 to 70yrs had some degree of erectile dysfunction.[3] It is estimated that the worldwide prevalence of ED will increase dramatically by 2025.[4]

Although the condition is considered benign, and may not mean a total loss of sexual satisfaction for some, it often contributes to anxiety, stress, depression and low self esteem.[5] Personal relationships are negatively affected and a poor quality of life is inevitable. It is often assumed to be a natural aspect of aging and therefore a misfortune that must be accepted.[6] This assumption is not always correct as erectile dysfunction may occur as a result of specific illnesses like Diabetes Mellitus[7] or Coronary Artery Disease[8], or as the consequence of the treatment of others like Hypertension.[9]

Pharmacological advances in the management of erectile dysfunction have stimulated more interest in the study of sexual dysfunction with the resultant increase in published research. Prevalence studies unique to local communities are essential and needed because prevalence studies identify potential risk factors[8] and may also serve as predictors of undiagnosed medical conditions.

Accurate assessments require recognition by both patient and doctor that the problem is only part of overall male sexual dysfunction and that both psychological and organic components need to be considered along with personal circumstances.

The role of the primary care physician in treating erectile dysfunction has never been more demanding and compelling, many of whom have failed to pursue the diagnosis and take full advantage of clinical tools that are efficient and quick to administer.[10]

Erectile dysfunction represents an excellent opportunity for Health Promotion and initiating assessments and interventions that may enhance quality of life and perhaps longevity of our patients.[11] Good surveys of prevalence and risk factors for erectile dysfunction in a primary care environment is important because the results can often assist physicians with fundamental guidelines on sexual counselling in their everyday practice.[12]

In South Africa, there is very little data on the prevalence of erectile dysfunction.

The data obtained in this study will be used to create awareness amongst Primary Health Care physicians about erectile dysfunction and its association with co morbid conditions. This will ensure physicians appropriately manage erectile dysfunction as well as improve the quality of life of erectile dysfunction sufferers. Epidemiologic studies often help in boosting awareness of ED both in the medical and general communities.[13]

General practitioners have been ambivalent about sexuality for a long time.[14] Although they are a point of first contact within a healthcare system, there is a reluctance to discuss sexual concerns often citing lack of knowledge and skills or even inadequate reimbursement for lengthy consultations.

Erectile dysfunction is a very prevalent problem and relevant to the practice of primary care doctors who attend to patients who have co-morbidities that are considered risk factors for erectile dysfunction. The presence of sexual dysfunctions can also be a marker for yet undiagnosed medical conditions. Erectile dysfunction can have a very negative effect on the quality of life of patients and effective management will only promote a better overall health in men, improve the quality of the doctor – patient relationship and enhance compliance of treatment for chronic conditions.

1.2 STATEMENT OF THE PROBLEM

1.2.1 RESEARCH HYPOTHESIS

The prevalence of erectile dysfunction in a general population attending an urban primary health care clinic is high and there is an association between erectile dysfunction with age, smoking, occupation status and co-morbid conditions like Diabetes Mellitus, Hypertension, Ischaemic Heart Disease, and Depression.

1.2.2 RESEARCH QUESTIONS

1.2.2.1 To determine the prevalence of erectile dysfunction amongst men attending a primary health care clinic.

1.2.2.2 To determine the relationship between erectile dysfunction with age, smoking, occupation status and co-morbid conditions like Diabetes Mellitus, Hypertension, Ischaemic Heart Disease and Depression.

1.3 PURPOSE OF THE RESEARCH

Epidemiological data are the cornerstone of assessing the overall impact of a condition.[15] The availability of prevalence data on erectile dysfunction will create an awareness among physicians about the condition and thereby enhance assessment and treatment of this condition. The result will be an improvement in the quality of holistic care offered to patients. A strong correlation with certain risk factors will also help understand the aetiology of the condition. Furthermore, the presence of erectile dysfunction in patients may serve as indicators for undiagnosed medical conditions like diabetes and hypertension.

1.4 SPECIFIC OBJECTIVES OF THE RESEARCH

The study determined the prevalence of erectile dysfunction in a general population of men attending a primary health care clinic in Kwazulu-Natal, South Africa. The study also investigated the relationship between erectile dysfunction and age, smoking, occupation status and co-morbid conditions like Diabetes Mellitus, Hypertension, Ischaemic Heart Disease and Depression.

2. CHAPTER II : LITERATURE REVIEW

2.1 EPIDEMIOLOGY

Clinical research in sexual medicine is an extremely diverse field having numerous facets each with many unresolved questions and issues that can have a conspicuous impact on the overall quality of the research in the area.[16] Methodological rigor in sexual medicine research varies greatly from simple surveys and case-control studies to large, multi centred randomised clinical trials.

Englert *et al* have reported that the first epidemiological study of male sexual behaviour was published in 1948 by Kinsey which demonstrated a prevalence of erectile dysfunction ranging from <1% for young men to 80% in the uppermost age group.[17] The Massachusetts Male Aging Study (MMAS) done almost 40 years later showed an overall prevalence of 52 % in a sample of men aged between 40 and 70 years.[3] Although there has been tremendous advances in the understanding of erectile physiology and patho-physiology of Erectile Dysfunction in the past 20 years, a boost by the growing interest in the pharmaceutical industry in the past 10 years have resulted in an increase in prevalence studies.[13]

In the past decade several studies have been carried out worldwide to establish the prevalence of erectile dysfunction. The conservative variations in prevalence rates, from 5.4% in a Danish study[18] to 92% in an Australian study[19] are dependant on the methodology, target group, sample size, and the definition of erectile dysfunction used.

Erectile dysfunction prevalence may vary according to cultural, racial, and health variables among countries.[20] In Wales, Green *et al* reported a 13% prevalence rate in men aged 55 – 70 years,[21] while in Korea a cross sectional study in a sample of 3501 men showed an age adjusted prevalence of 32.2%.[12]

A meta-analysis of 34 published studies on the prevalence of ED in Asia reported a range of prevalence from 2 to 81.8% with age being one of the most consistent predictor of ED.[22] This analysis recognises that definitions and methodologies in ED research are varied and are regarded as a major source of variability in the estimates of ED prevalence worldwide.

A study in 2001 estimated that 25 million men older than 18 years in Brazil had some degree of erectile dysfunction.[23] This study also demonstrated a strong correlation between erectile dysfunction and age, diabetes, hypertension and depression. Nolazco *et al* have reported in a study in Argentina that although the prevalence of erectile dysfunction was high, only one out of seven men reached a medical consultation regarding sexual health.[13]

Although, the epidemiological data from around the world is increasing, there are only a few studies from Africa and more especially South Africa. A population based study in Morocco with socio-cultural and religious characteristics different to Western countries demonstrated a prevalence of 54 % and a strong correlation with diabetes, hypertension, cardiovascular disease and smoking.[24] Another multicultural study revealed a prevalence of 57.4% and 63.6% in Nigeria and Egypt respectively.[25] In these studies, older age, diabetes, and depression were independently associated with increased prevalence of ED.

The only reported study in South Africa demonstrated an ED prevalence of 44.9% in a black and mixed race population in the Western Cape.[26]

Several studies have demonstrated that ED can be associated with chronic medical conditions and such relationships may be useful in proposing strategies for prevention and screening of ED.[27] Heruti *et al* have a demonstrated a strong correlation of ED with age and diabetes.[28]

The Enigma Study, reporting a prevalence of 38.4%, found a significant correlation of ED with age, smoking, diabetes and cardiovascular disease.[29]

The majority of experts in the discipline of sexual medicine believe that sexual dysfunctions are multi-determined conditions with biological, psychological and interpersonal elements playing some role in the aetiology.[15] An understanding of the anatomy, physiology and pathology of erectile dysfunction is important in the quest to determine the relationship of this condition with risk factors and co-morbid medical conditions.

2.2 PENILE ANATOMY

The penis is the male copulatory organ and the common outlet for urine and semen.[30] It is located above the scrotum and is linked to the pubic symphysis by two ligaments.[31]

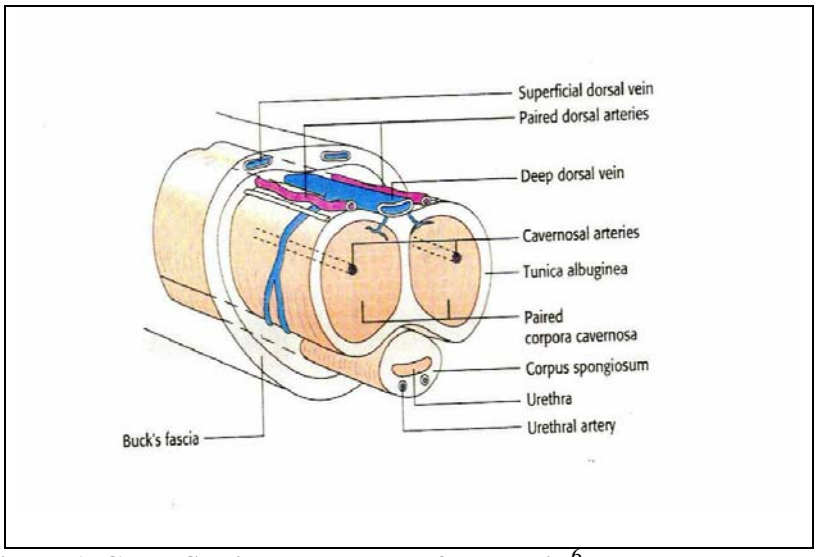


Figure.1. Cross-Sectional anatomy of the penis [6]

The penis consists of three cylindrical columns of tissue surrounded by a sturdy fascial layer (Bucks fascia), subcutaneous tissue and skin.[6] The two parallel corpora cavernosa lie in line with the corpus spongiosum which encircles the urethra on the underside of penis and expands at its tip to form the glans penis**.** The erectile bodies of the penis are the paired corpora cavernosa on the dorsal aspect of the penis , the two corpora cavernosa function as blood capacitors that provide structure to the erect organ and is surrounded by a thick non expansile fibrous envelope, the tunica albuginea[32] (Fig 1)

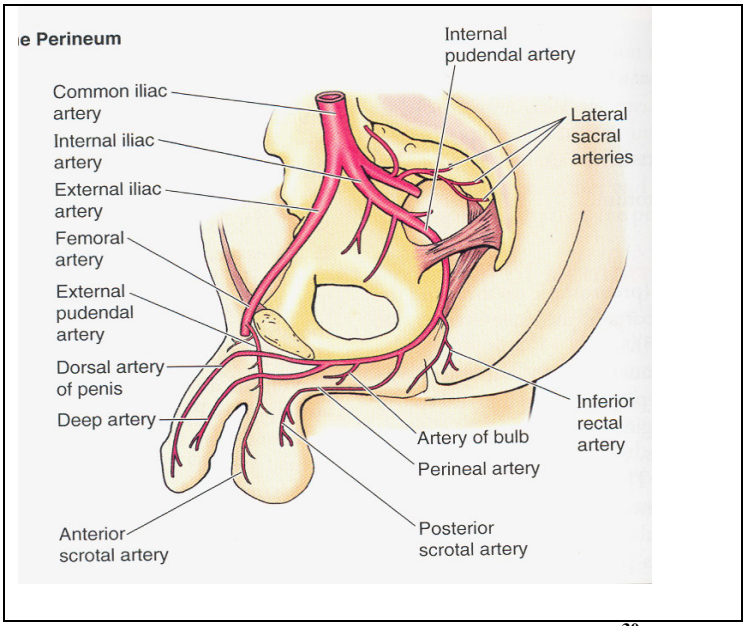


Figure. 2. Arterial blood supply of the perineum. [30]

The corpus cavernsum is a unique vascular bed consisting of a distensible lattice of blood sinusoids whose arterial blood supply arise from helicine arteries which in turn are supplied by the deep dorsal artery, a branch of the terminal penile artery that take origin from the internal pudendal artery.[32] (Fig 2). The sinusoids are surrounded by a trabeculae of smooth muscle. Each corporal body communicates with the other through the medial septum that separates them.[6]

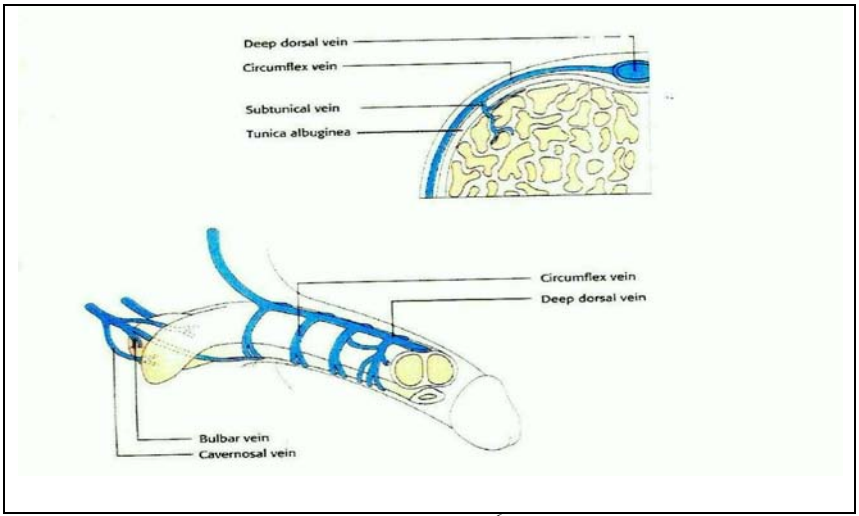


Figure.3. Venous drainage of the penis [6]

The trabeculae and sinusoids are drained by emissary veins which then collect in the deep dorsal veins of the penis which run up the dorsal surface of the penis to form the prostatic venous plexus.[6] (Fig 3)

2.3 PHYSIOLOGY

The mechanism of erection is controlled by the autonomic nervous system.[33] Parasympathetic nerves from S2-4 are the principal mediators of erection, while sympathetic nerves from T11- L2 control ejaculation and detumescence. These autonomic fibres unite in the pelvic plexus to form the cavernous nerves, which run down behind the prostate and into the base of the penis, these nerves and the pelvic plexus itself are susceptible to damage from any form of pelvic surgery. The pelvic nerves contain sensory and motor elements that form a reflex arc through the spinal cord, in an area known as the spinal centre. A "reflex" erection therefore occurs as a direct result of stimulation of the penis, and can even occur in patients who have suffered a suprasacral spinal cord transection.

Immunochemistry has provided insight into the composition of the corporeal extracellular matrix suggesting that human erectile tissue consists of an abundance of smooth muscle cells interspersed in a collagenous extracellular matrix with a rich blood supply and a relatively sparse neuronal component.[34]

2.4 HAEMODYNAMICS OF ERECTION

Normal erections occur in response to psychological or physical stimulation of the penis, first nitric oxide is released from the nerve endings in the corpus cavernosum which produces dilation of the cavernosal arteries. This in turn increases blood flow into the penis. The blood flow stimulates the endothelial cells that line the lacunar spaces to produce more nitric oxide, and the increased nitric oxide production causes relaxation of the corpus cavernosum smooth muscle.

The venous structures beneath the very rigid Tunica Albuginea are compressed, producing a rigid erection.[35] In addition, the central nervous system stimulates the perineal musculature to contract, which further increases the pressure exerted in the penis and actually raises the pressure beyond that of the abdominal aorta. The erection persists until the stimulation is decreased and the nitric oxide disappears.[35]

2.5 BIOCHEMICAL BASIS OF ERECTION

The key modulator of erection is the tone of the smooth muscle walls of the helicine arteries and the trabecula spaces. This is controlled by the level of calcium in the smooth muscle cells.[36] A number of neurotransmitters and endothelium derived factors are able to influence calcium and thereby alter the balance between penile flaccidity and erection. (Fig.4)

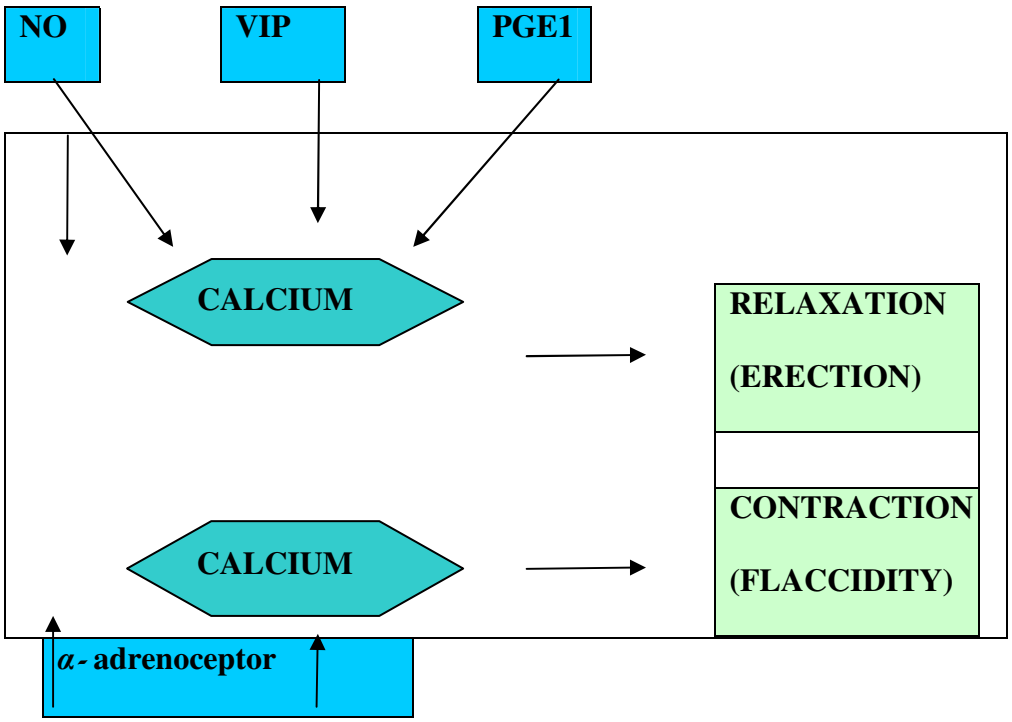


FIGURE.4: FACTORS THAT INFLUENCE BALANCE BETWEEN ERECTION AND FLACCIDITY [36]

The relaxation of corpus cavernosal smooth muscle required for erection is mediated by Nitric Oxide (NO), which is synthesized from L arginine by the enzyme nitric oxide synthase and released by neurons, endothelial cells, and possibly corporal smooth muscle cells in response to sexual stimulation.[37]

After diffusing into the smooth muscle cells, it activates a guanylate cyclase second messenger system. Guanylate cyclase converts Guanosine triphosphate (GTP) into cyclic Guanosine monophosphate (cGMP). This then activates the sodium pump mechanism and opens potassium channels, causing a decrease in intracellular calcium. The effect of cGMP is terminated by enzymatic breakdown.[38]

In the human corpus cavernosum, cyclic nucleotide Phosphodiesterase isoenzyme type 5 (PDE5) is the predominant isoenzyme.[39] Other vasodilator mechanisms exist, including ones involving Vasoactive Intestinal Peptide (VIP) and Prostaglandin E1(PGE1), both of which act through the adenylate cyclase system. VIP and PGE1 molecules stimulate the production of cyclic adenosine Monophosphate (cAMP) from adenosine triphosphate (ATP) which reduces intracellular calcium thereby inducing smooth muscle relaxation.[39] The vasoconstrictor noradrenaline (NA) counterbalances the smooth muscle relaxation mechanisms.

Noradrenaline is released from sympathetic nerve terminals within the corpora, and diffuses across the synaptic gap activating α adrenoceptors on the cell membranes of smooth muscle cells (Fig.4) These α adrenoceptors are linked to second messenger pathways that raise intracellular calcium, from the extracellular compartment, or by releasing calcium from intracellular organelles.[40]

2.6 PHYSIOLOGY OF ERECTILE DYSFUNCTION

Corpus cavernosal smooth muscle relaxation and penile erection depend on a delicate balance between the effects of contractile (noradrenaline, endothelin, contractile prostanoids) and vasorelaxing factors (NO, VIP). A threshold level of corporal smooth muscle relaxation is required to convert the flaccid penis to an erect state.[40]

It has been suggested that the basic underlying defect in patients with erectile dysfunction may be an imbalance between contraction and relaxation of corpus cavernosal smooth muscle.[36]

If corporal smooth muscle tone is too great, the maximum level of corporal relaxation will be insufficient to permit the increased blood flow required for a normal erection. If a threshold level of smooth muscle relaxation is not achieved or maintained, resistance to venous outflow will be incomplete, resulting in a wide spectrum of penile rigidity.[37]

2.7 CLASSIFICATION OF ERECTILE DYSFUNCTION

Many classifications have been proposed for erectile dysfunction. Some are based on the cause (diabetic, iatrogenic, traumatic) and some on the neurovascular mechanism of the erectile process (failure to initiate (neurogenic), failure to fill (arterial) and failure to store (venous)).[41]

Erectile dysfunction has traditionally been classified as either psychogenic due to central inhibition of erectile mechanism without a physical insult, organic due to vasculogenic, hormonal or cavernosal abnormalities or lesions, or mixed organic and psychogenic. Although this classification is useful, it is deficient in many ways and counterproductive in terms of diagnosis, treatment and research.[42] An alternative classification, based on the proposals of the Nomenclature Committee of The International Society for Sexual and Impotence Research is presented.

2.7.1 AN ALTERNATE CLASSIFICATION OF ERECTILE DYSFUNCTION[42]

2.7.1.1. ORGANIC

1) VASCULOGENIC – Arteriogenic, Cavernosal, Mixed
2) NEUROGENIC
3) ANATOMIC
4) ENDOCRINOLOGIC

2.7.1.2. PSYCHOGENIC

GENERALIZED

1) Generalized unresponsiveness- Primary lack of sexual arousability.

   - Age related decline in sexual arousability

2) Generalized inhibition- chronic disorder of sexual intimacy

SITUATIONAL

1) Partner related- Lack of arousability in a specific relationship

- Lack of arousability owing to sexual object preference

- High central inhibition owing to partner conflict or threat.

2) Performance related – Associated with other sexual dysfunction/s

(E.g. rapid ejaculation)

- Situational performance anxiety (E.g. fear of failure)

3) Psychological distress or adjustment- related – Associated with negative mood state (E.g. depression) or major life stress, (E.g. death of partner)

2.8 PSYCHOGENIC ERECTILE DYSFUNCTION

Psychogenic erectile dysfunction can be caused by a number of problems such as performance anxiety, guilt, depression, relationship problems or by fear and performance anxiety. Performance anxiety is an especially common cause of erectile problems and may be self perpetuating, with any subsequent attempts at sexual contact being burdened by a fear of failure that only serves to exacerbate the problem.

Treatment alternatives in this situation are either to identify the source of anxiety, guilt or depression and provide a psychological treatment to initiate a physical (drug) treatment that overcomes the specific problem of erectile dysfunction.[6] Psychosexual support is always appropriate, mostly treatment will involve educating the patient about the medications that can stimulate an erection in a non specific manner (that is regardless of the cause of the dysfunction)

2.9 THE INTERNATIONAL INDEX OF ERECTILE FUNCTION (IIEF)

The International Index of Erectile Function (IIEF), which consists of 15 items and 5 domains, is a psychometrically valid and reliable instrument that was developed through consultations with an international panel of experts for use in determining efficacy of treatment in controlled clinical trials.[43] The IIEF is a widely used, multi-dimensional instrument for the evaluation of male sexual function and has a high sensitivity and specificity for detecting real treatment effects or the lack of treatment effects in patients with erectile dysfunction of broad aetiology.[44]

It has been validated in 32 languages and used as a gold standard in research and clinical settings for the assessment of erectile function.[45] The 15 item self administered questionnaire was developed in stages, including initial pretesting with selected patient groups and expert panel consultants, followed by intensive linguistic validative processes.[43] Based upon principal components analysis and additional expert review, the 15 item questionnaire was divided into 5 domains viz erectile function (questions 1-6), orgasmic function (questions 9&10), sexual desire (questions 11&12), intercourse satisfaction (questions 7,13&14), and overall sexual satisfaction (questions 8 & 15).[46] APPENDIX 'A'

The six items on the erectile function domain include detail questions concerning erection frequency, erection firmness, penetration ability, maintenance ability (2 questions) and erection confidence.[45] Each item is based on a 5 point Likert scale.[46] For each subject, the responses of all six items of the domain are added to arrive at a total erectile function score, with a range from 0 to 30.[46] A higher total score indicates a relatively better erectile functioning.

The IIEF is widely used in clinical trials and the EF domain is a valid diagnostic tool for grading the severity of ED.[46] There is no clear cut-off score in the literature with some studies using 21[47] and others 25[43,44,45,46] as the cut-off score for the erectile function domain. The cut-off score of 21 is used in studies that make use of the IIEF 5, (a modification of the IIEF 15.) In this study, a cut of score of 25 was used in the EF domain of the IIEF 15.

A cut off score of 25 was used because the IIEF 15 questionnaire was utilised in this study. This is based on the recommendations of Cappelleri *et al* [46,] in the diagnostic evidence of erectile dysfunction domain. Six items with a total score of 30 provided the basis for determination of ED. The severity was graded as mild (22 – 25), moderate (17 – 21) and severe (<16) with score above 25 indicating no erectile dysfunction.

The other domains of sexual function are orgasmic function with two items used as determinants of orgasmic function giving a score total score of 10, sexual desire domain with a total score of 10 from two items, intercourse satisfaction with 3 items on the questionnaire giving a total score of 15 and overall satisfaction with 2 items of the IIEF 15 used to give a total score of 10. For each of these domains, there are no cut off scores, with mean scores used to determine level of function for each of the domains.

Although laboratory based diagnostic procedures are available, the use of the above tool in a naturalistic setting is practical and economical. Hence this questionnaire was used in this study. The self administered questionnaire has the advantage of providing a relatively cost efficient assessment of past and current sexual capabilities. Laboratory based physiological measures of erectile function (EF) such as volumetric plethysmography (Rigiscan), strain gauge plethysmography and erectiometer are not easily accessible and do have design and methodological weaknesses.[48]

3. CHAPTER III : METHODOLOGY

3.1 STUDY DESIGN

An analytic, cross-sectional quantitative study

3.2 PILOT STUDY

A pilot study consisting of twenty patients was carried out to determine the validity of an isiZulu version of the IIEF15 questionnaire. Patients participating in the pilot study did not form part of the main study. The IsiZulu translation of the questionnaire was found to be identical to the English version using test –retest repeatability measurements.

3.3. STUDY POPULATION

All men attending the primary health care clinic at Addington hospital during the period February to March 2008 were included in the study.

3.4. TARGET POPULATION

All men above 18 years attending the primary health care clinic and who gave voluntary consent to participate in the study were included in the random sample.

3.4.1 INCLUSION CRITERIA

All men above 18 years who attended the primary health care clinic.

Men who gave voluntary consent to participate in the study.

3.4.2 EXCLUSION CRITERIA.

All men with Neurological disorders.

3.5. SAMPLE SIZE

A sample was selected for the cross sectional erectile dysfunction prevalence study, based on a 4% marginal precision with every third male patient was selected to participate in the study. The prevalence period was two months and sampling took place over 4 days randomly selected per month. (Epi info Epitable random number list).

Sampling was not stratified by age group as we anticipated a representative sample of the source population to present to the clinic over the randomly selected days. We did not expect any sampling bias to occur during this method of sampling.

3.6. DATA COLLECTION AND ANALYSIS

The data was obtained using a structured questionnaire which has already being validated.[43] The questionnaire was self administered at the time of attending the clinic. All participants were requested to sign an informed consent form. None of the participants required an interpreter, who was available, to read out the questionnaire if they were illiterate.

The questionnaire was composed of an introduction, questions regarding the socio-demographic status, including age, employment status, income and a checklist of the history of chronic medical conditions experienced by the respondents. To this were added the 15 questions of the IIEF pertaining to sexual activity (APPENDIX A)

The self administered questionnaire was given to the subject for completion in private, then returned to the researcher in a sealed envelope. The completed questionnaires were double entered into a computerized data base to check for errors and internal consistency. (SPSS v.13 was used for analysis).

In all bivariate and multivariate analyses, erectile dysfunction was be dichotomized as none, mild, moderate or severe. Confidence interval was calculated at 95%.

The statistical significance (two-tailed - $p.<0,05$) of various risk factors for erectile dysfunction was assessed by Pearson chi-square tests for categorical variables. Median scores were calculated for the other domains of sexual function. Non parametric tests, Mann Whitney and Kruskal Wallis tests were done on the association of the other domains of sexual function with the categorical variables.

3.7 VALIDITY AND RELIABILITY

The IIEF is a validated questionnaire that has been widely used internationally. In order to achieve internal consistency, the questionnaires were distributed and collected by the researcher at one specific clinic. The pilot study was conducted to determine the reliability of the isiZulu version of the questionnaire using the test – retest method.

3.8 ETHICAL CONSIDERATIONS

Permission to do the study was sought from the medical manager of Addington Hospital (Appendix) and the Kwazulu- Natal Department of Health (Appendix). Approval for the study was obtained from Biomedical Research Ethics Committee of the Nelson R Mandela School of Medicine. (Reference number BF087/07) (Appendix). All the respondents were requested to sign an informed consent form before participating in the study. (Appendix)

4. CHAPTER IV: RESULTS

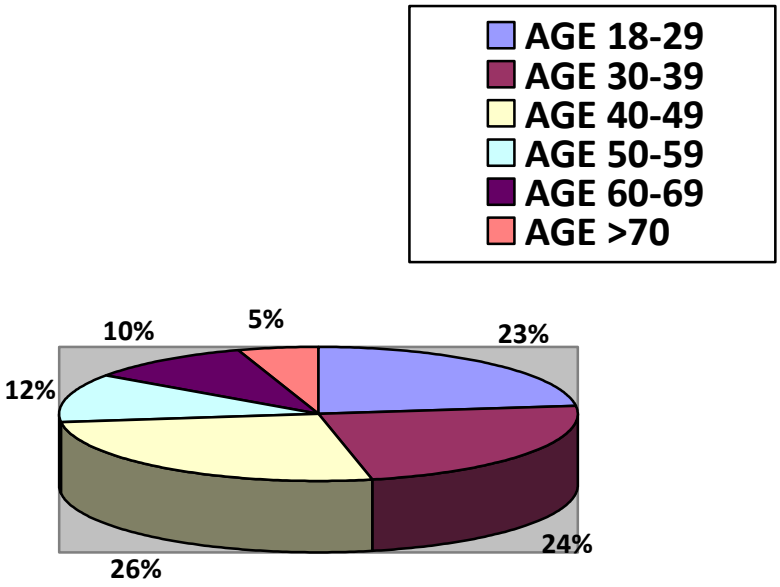
4.1. DEMOGRAPHICS

A total of 1300 randomly selected men participated in the study during the two month prevalence period. The number of questionnaires that were eligible for analysis were 803 (n=803) giving a completion rate of 62%. The questionnaires excluded from the study were those questionnaires that were incomplete with missing data or were illegible.

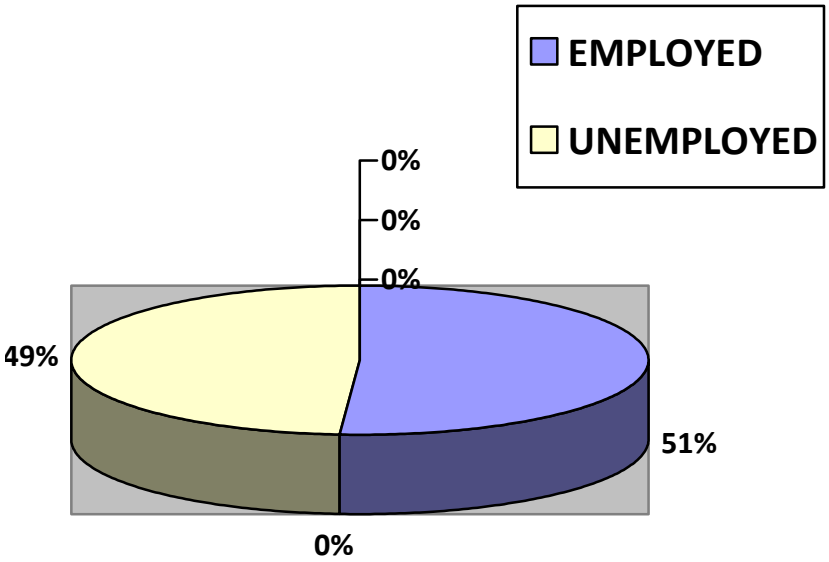
Of the study participants (803), 23.0% (185) were in the 18-29 age groups, while 41% were over 70years (Table1). The employment status indicated 51.1% being formally employed and a total of 87% having an income of less than R5000 per month.

Table 1. Demographics of study population

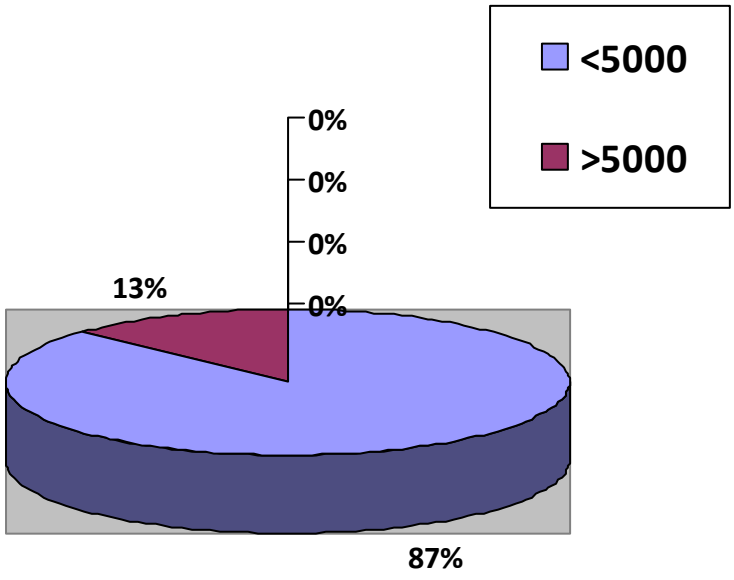
		Frequency	Percent
Age			
Valid	18-29	185	23.0
	30-39	190	23.7
	40-49	211	26.3
	50-59	94	11.7
	60-69	82	10.2
	>=70	41	5.1
	Total	**803**	**100.0**
Occupation			
Valid	Employed	410	51.1
	Unemployed	393	48.9
	Total	803	100.0
Income			
Valid	<5000	699	87.0
	>5000	104	13.0
	Total	**803**	**100.0**
Smoking			
Valid	Yes	496	61.8
	No	307	38.2
	Total	**803**	**100.0**
Diabetes			
Valid	No	627	78.1
	Yes	176	21.9
	Total	**803**	**100.0**
Depression			
Valid	No	717	89.3
	Yes	176	21.9
	Total	**803**	**100.0**
Hypertension			
Valid	No	528	65.8
	Yes	275	34.2
	Total	**803**	**100.0**
Cardiovascular heart disease			
Valid	no	742	92.4
	Yes	61	7.6
	Total	**803**	**100.0**



1.2. EMPLOYMENT STATUS



1.3. INCOME



4.2. RESULTS OF THE IIEF QUESTIONS

The following figures represent the actual results of the questions for the different domains of sexual function. The mean scores for the other domains of sexual function are presented in Table 2 and graphically illustrated in Figs 5 -9.

Table.2. Mean scores of domains of sexual function

		Erectile function score	Satisfactory score	Orgasm score	Desire score	Overall score
N	**Valid**	**803**	**803**	**803**	**803**	**803**
	Missing	0	0	0	0	0
Mean		19.5841	8.4359	6.3225	6.2565	6.6750
Std. Deviation		8.37219	4.15405	3.18496	2.20834	2.70360
Minimum		1.00	.00	.00	2.00	2.00
Maximum		30.00	15.00	10.00	10.00	10.00

Figure. 5. Mean scores for Erectile function

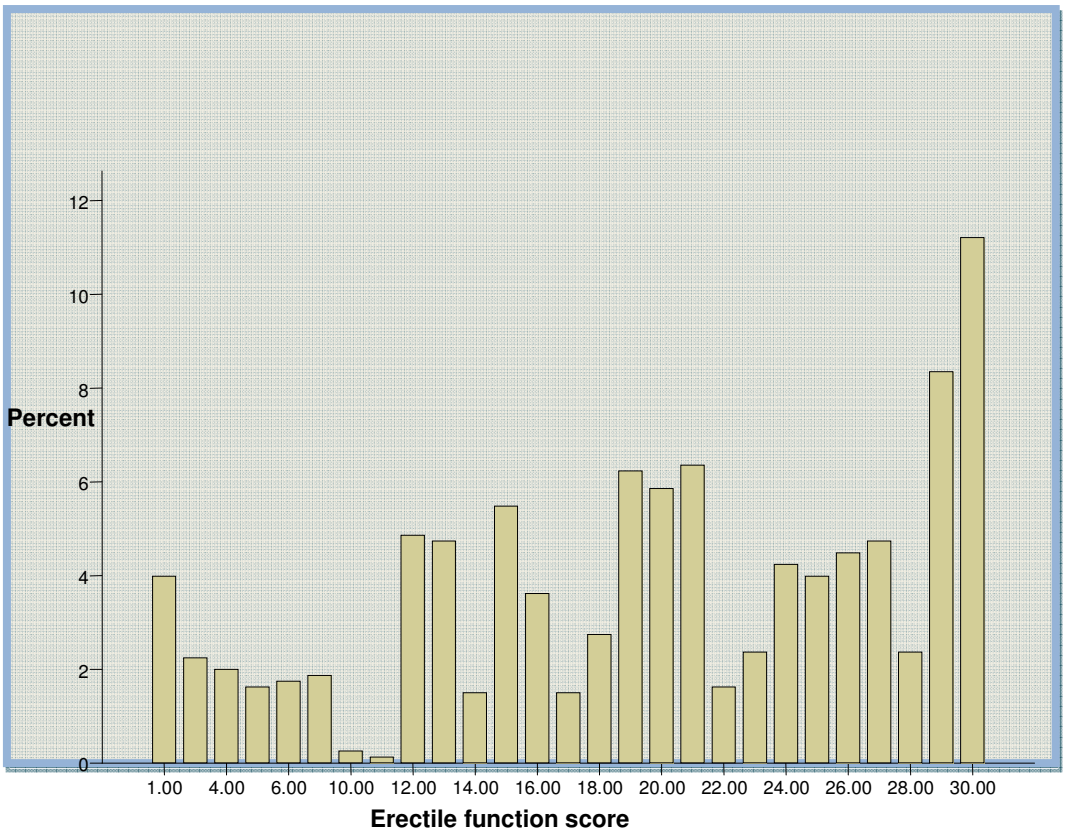


Figure.6. Mean scores for sexual satisfaction domain.

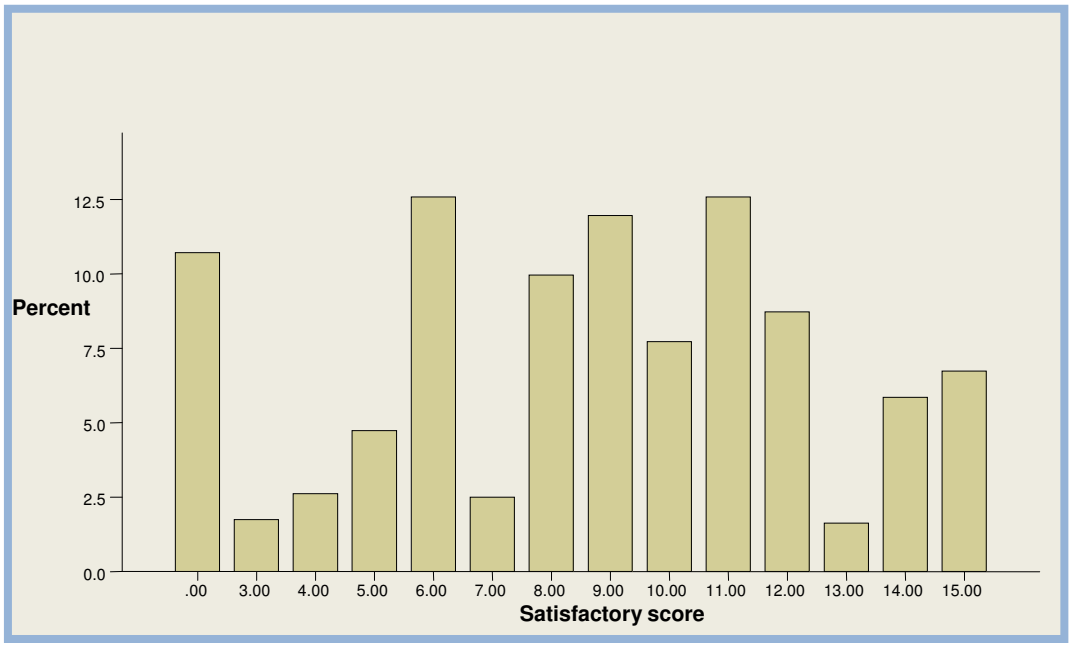


Figure.7. Mean scores for Orgasmic function

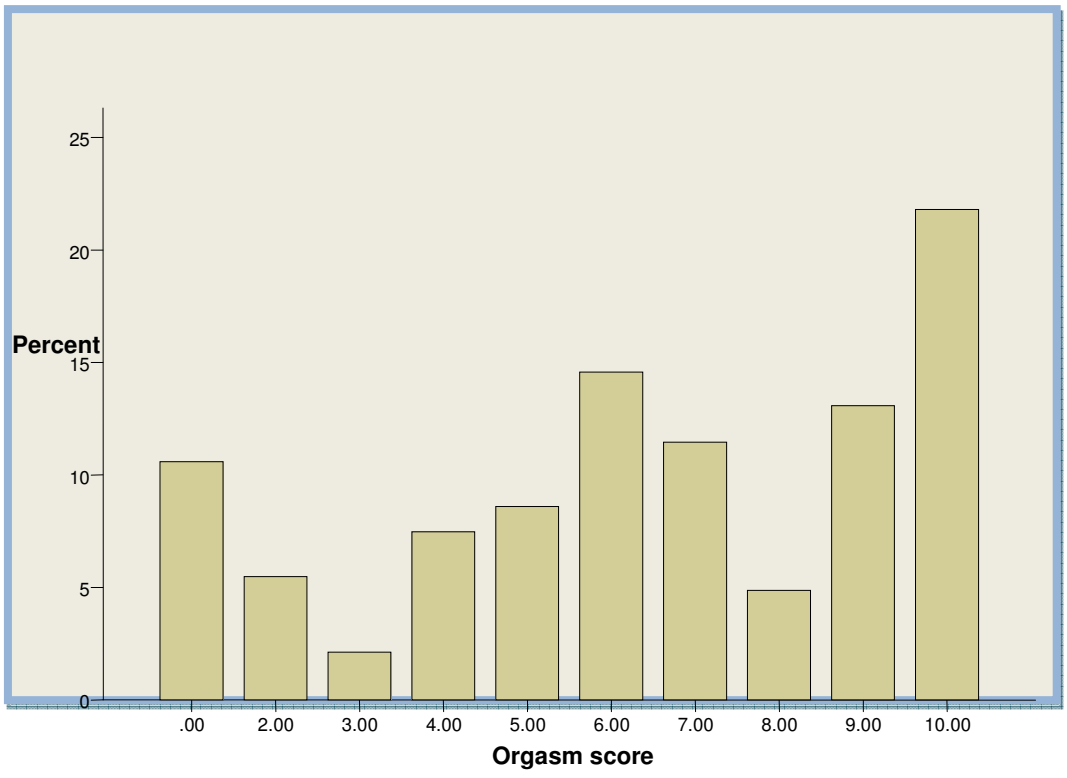


Figure.8. Mean scores for Desire function

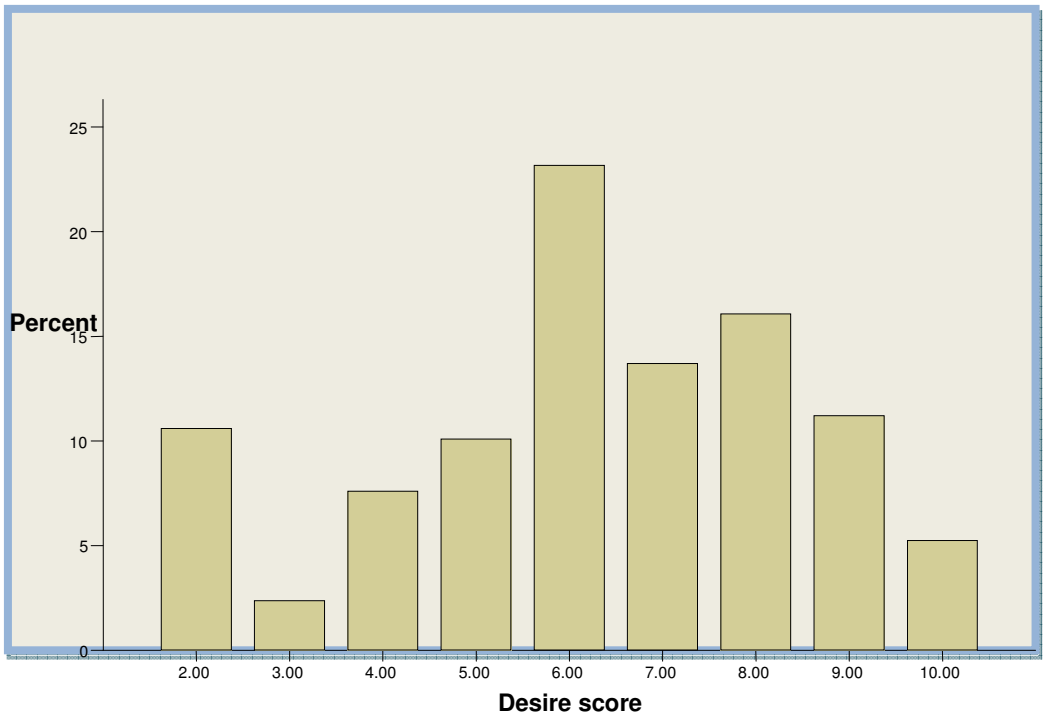
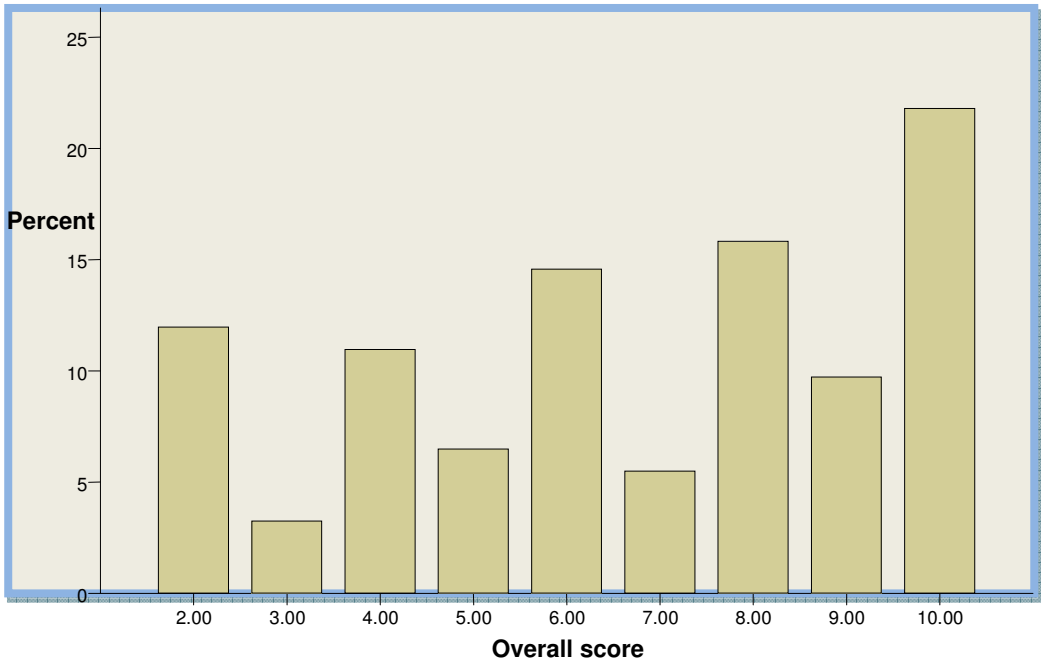


Figure.9. Mean score for Overall domain



4.3. PREVALENCE OF ERECTILE DYSFUNCTION

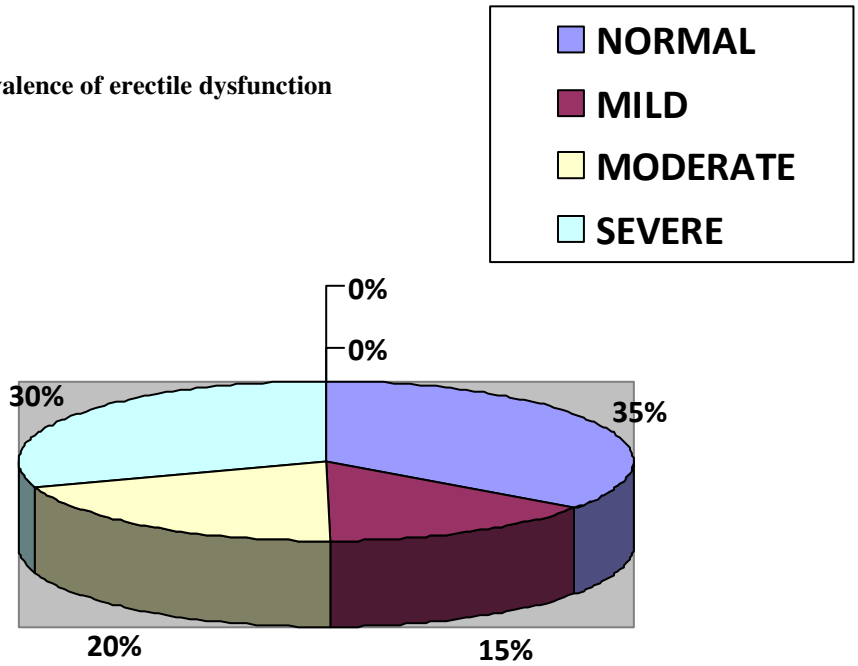
The number of participants reporting a history of chronic conditions is indicated in Table 1.

The overall prevalence of erectile dysfunction in this study was 64.9% with 14.6% having mild erectile dysfunction, 19.9% moderate erectile dysfunction and 30.4% severe erectile dysfunction. (Table.3)

TABLE.3. Prevalence of Erectile Dysfunction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	normal	282	35.1	35.1	35.1
	mild	117	14.6	14.6	49.7
	moderate	160	19.9	19.9	69.6
	severe	244	30.4	30.4	100.0
	Total	**803**	**100.0**	**100.0**	

Prevalence of erectile dysfunction



The association of age and erectile dysfunction is shown in Table 4.

4.4. ASSOCIATION OF ERECTILE DYSFUNCTION WITH AGE

The overall prevalence of erectile dysfunction (any degree) in the 18-29 age group was 68.1%, in the 30-39 age group 44.7%, in the 40-49 age group, 62.6% in the 50-59 age group, 78.7% in the 60-69 age group, 86.6% and in the above 70 age group, 80.5%. (Table 4)

Table. 4. The association of Erectile Dysfunction with age

			Degree of Erectile Dysfunction				
			normal	mild	moderate	severe	**TOTAL**
Age group							
	18-29	Count	59	46	34	46	185
		% within age group	31.9%	24.9%	18.4%	24.9%	100.0%
	30-39	Count	105	28	20	37	190
		% within age group	55.3%	14.7%	10.5%	19.5%	100.0%
	40-49	Count	79	30	71	31	211
		% within age group	37.4%	14.2%	33.6%	14.7%	100.0%
	50-59	Count	20	3	32	39	94
		% within age group	21.3%	3.2%	34.0%	41.5%	100.0%
	60-69	Count	11	8	2	61	82
		% within age group	13.4%	9.8%	2.4%	74.4%	100.0%
	>=70	Count	8	2	1	30	41
		% within age group	19.5%	4.9%	2.4%	73.2%	100.0%
Total		**Count**	**282**	**117**	**160**	**244**	**803**
		% within age group	**35.1%**	**14.6%**	**19.9%**	**30.4%**	**100.0%**

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	231.619(a)	15	.000
Likelihood Ratio	226.662	15	.000
Linear-by-Linear Association	71.682	1	.000
N of Valid Cases	803		

A 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.97.

Table.12. The association of age groups to median scores of the different domains

Age group		Satisfactory score	Orgasm score	Desire score	Overall score
18-29	Median	9.0000	7.0000	6.0000	8.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
30-39	Median	11.0000	9.0000	8.0000	8.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
40-49	Median	9.0000	7.0000	7.0000	7.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
50-59	Median	8.0000	5.0000	5.0000	4.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
60-69	Median	6.0000	3.0000	4.0000	4.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	12.00	10.00	8.00	10.00
>=70	Median	5.0000	4.0000	6.0000	3.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	12.00	10.00	9.00	10.00
Total	Median	9.0000	7.0000	6.0000	7.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
Kruskal-Wallis Test					
Test Statistics (a,b)					
Chi-Square		128.844	159.065	128.426	164.770
Df		5	5	5	5
Asymp. Sig.		.000	.000	.000	.000

a Kruskal Wallis Test

b Grouping Variable: age group

There was a highly significant difference in median scores between the age groups ($p<0.001$ for all scores)

4.5. ASSOCIATION OF ERECTILE DYSFUNCTION WITH INCOME AND SMOKING

The association of erectile dysfunction with occupation status, household income and smoking is presented in Tables 5, 6 and 7 respectively. The statistical analyses relating to the correlation is found below each table.

Table.5. The association of Erectile Dysfunction with Occupation Status

			Degree of ED				
			normal	mild	moderate	severe	**TOTAL**
occupation	Employed	Count	168	50	113	79	410
		% within occupation	41.0%	12.2%	27.6%	19.3%	100.0%
	Unemployed	Count	114	67	47	165	393
		% within occupation	29.0%	17.0%	12.0%	42.0%	100.0%
Total		Count	282	117	160	244	803
		% within occupation	35.1%	14.6%	19.9%	30.4%	100.0%

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	70.018(a)	3	.000
Likelihood Ratio	71.551	3	.000
Linear-by-Linear Association	22.472	1	.000
N of Valid Cases	803		

A 0 cells (.0%) have expected count less than 5. The minimum expected count is 57.26.

Table.13. The association of occupation with median scores of the domains:

Occupation		Satisfactory score	Orgasm score	Desire score	overall score
Employed	Median	10.0000	7.0000	7.0000	8.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
Unemployed	Median	8.0000	6.0000	6.0000	6.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
Total	Median	9.0000	7.0000	6.0000	7.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
Test Statistics (a)					
Mann-Whitney U		68727.500	67786.500	68465.500	67316.500
Wilcoxon W		146148.500	145207.500	145886.500	144737.500
Z		-3.620	-3.928	-3.726	-4.077
Asymp. Sig. (2-tailed)		.000	.000	.000	.000

a Grouping Variable: occupation

There was a highly significant difference between the employed and unemployed for all scores.

Table.6. The association of Erectile Dysfunction with Household Income

			Degree of ED				
			normal	mild	moderate	severe	**TOTAL**
income	<5000	Count	230	103	133	233	699
		% within income	32.9%	14.7%	19.0%	33.3%	100.0%
	>5000	Count	52	14	27	11	104
		% within income	50.0%	13.5%	26.0%	10.6%	100.0%
Total		Count	282	117	160	244	803
		% within income	35.1%	14.6%	19.9%	30.4%	100.0%

Chi-Square Tests	Value	Df	Asymp. Sig. 2-sided)
Pearson Chi-Square	25.249(a)	3	.000
Likelihood Ratio	28.834	3	.000
Linear-by-Linear Association	17.987	1	.000
N of Valid Cases	803		

A 0 cells (.0%) have expected count less than 5. The minimum expected count is 15.15.

Table.14.The association of income with median scores of the domains:

Income		Satisfactory score	Orgasm score	Desire score	Overall score
<5000	Median	9.0000	6.0000	6.0000	7.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
>5000	Median	10.0000	9.0000	6.5000	8.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
Total	Median	9.0000	7.0000	6.0000	7.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
Mann-Whitney Test					
Mann-Whitney U		27607.500	29125.500	27469.500	26566.000
Wilcoxon W		272257.500	273775.500	272119.500	271216.000
Z		-3.980	-3.305	-4.071	-4.481
Asymp. Sig. (2-tailed)		.000	.001	.000	.000

a Grouping Variable: income

Table.7. The association of Erectile Dysfunction with Smoking

			Degree of ED				
			normal	mild	moderate	severe	**TOTAL**
smoke	yes	Count	193	55	91	157	496
		% within smoke	38.9%	11.1%	18.3%	31.7%	100.0%
	no	Count	89	62	69	87	307
		% within smoke	29.0%	20.2%	22.5%	28.3%	100.0%
Total		Count	282	117	160	244	803
		% within smoke	35.1%	14.6%	19.9%	30.4%	100.0%

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.416(a)	3	.000
Likelihood Ratio	18.191	3	.000
Linear-by-Linear Association	.669	1	.413
N of Valid Cases	803		

A 0 cells (.0%) have expected count less than 5. The minimum expected count is 44.73.

Table.15. The association of smoking with median scores of the domains:

Smoke		Satisfactory score	Orgasm score	Desire score	Overall score
yes	Median	9.0000	6.5000	7.0000	8.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
no	Median	9.0000	7.0000	6.0000	6.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
Total	Median	9.0000	7.0000	6.0000	7.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
Test Statistics (a)					
Mann-Whitney U		74439.000	72380.000	67472.500	66548.000
Wilcoxon W		197695.000	195636.000	114750.500	113826.000
Z		-.534	-1.188	-2.745	-3.035
Asymp. Sig. (2-tailed)		.593	.235	.006	.002

a Grouping Variable: smoke

4.6. ASSOCIATION OF ERECTILE DYSFUNCTION WITH CHRONIC CONDITIONS

The association between Erectile Dysfunction and Diabetes, hypertension, Ischaemic Heart Disease and Depression is shown in Tables 8 to 11 respectively.

Table. 8. The association of Erectile Dysfunction with Diabetes

			Degree of ED				
			normal	mild	moderate	severe	**TOTAL**
Diabetes	no	Count	242	108	140	137	627
		% within diabetes	38.6%	17.2%	22.3%	21.9%	100.0%
	yes	Count	40	9	20	107	176
		% within diabetes	22.7%	5.1%	11.4%	60.8%	100.0%
Total		Count	282	117	160	244	803
		% within diabetes	35.1%	14.6%	19.9%	30.4%	100.0%

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	100.578(a)	3	.000
Likelihood Ratio	95.678	3	.000
Linear-by-Linear Association	60.385	1	.000
N of Valid Cases	803		

A 0 cells (.0%) have expected count less than 5. The minimum expected count is 25.64.

Table.16. The association of diabetes with median scores of the domains:

Diabetes		Satisfactory score	Orgasm score	Desire score	Overall score
no	Median	9.0000	7.0000	7.0000	8.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
yes	Median	6.0000	4.0000	5.0000	4.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
Total	Median	9.0000	7.0000	6.0000	7.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
Test Statistics (a)					
Mann-Whitney U		39953.500	32792.000	43053.000	27748.000
Wilcoxon W		55529.500	48368.000	58629.000	43324.000
Z		-5.626	-8.314	-4.511	-10.199
Asymp. Sig. (2-tailed)		.000	.000	.000	.000

a Grouping Variable: diabetes

Table.9. The association of Erectile Dysfunction with Hypertension

			Degree of ED				
			normal	mild	moderate	severe	**TOTAL**
HBP	no	Count	230	87	82	129	528
		% within HBP	43.6%	16.5%	15.5%	24.4%	100.0%
	yes	Count	52	30	78	115	275
		% within HBP	18.9%	10.9%	28.4%	41.8%	100.0%
Total		Count	282	117	160	244	803
		% within HBP	35.1%	14.6%	19.9%	30.4%	100.0%

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	68.072(a)	3	.000
Likelihood Ratio	70.150	3	.000
Linear-by-Linear Association	60.516	1	.000
N of Valid Cases	803		

A 0 cells (.0%) have expected count less than 5. The minimum expected count is 40.07.

Table.17. The association of hypertension with median scores of the domains:

Hypertension		Satisfactory score	Orgasm score	Desire score	Overall score
no	Median	10.0000	8.0000	7.0000	8.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
yes	Median	6.0000	5.0000	6.0000	4.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
Total	Median	9.0000	7.0000	6.0000	7.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
Test Statistics (a)					
Mann-Whitney U		50589.500	47709.000	49052.000	33941.000
Wilcoxon W		88539.500	85659.000	87002.000	71891.000
Z		-7.091	-8.060	-7.640	-12.532
Asymp. Sig. (2-tailed)		.000	.000	.000	.000

a Grouping Variable: Hypertension

Table.10. The association of Erectile Dysfunction with Ischaemic Heart Disease

			Degree of ED				TOTAL
			normal	mild	moderate	severe	
heart	no	Count	279	116	159	188	742
		% within heart	37.6%	15.6%	21.4%	25.3%	100.0%
	yes	Count	3	1	1	56	61
		% within heart	4.9%	1.6%	1.6%	91.8%	100.0%
Total		Count	282	117	160	244	803
		% within heart	35.1%	14.6%	19.9%	30.4%	100.0%

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	117.749(a)	3	.000
Likelihood Ratio	111.933	3	.000
Linear-by-Linear Association	76.833	1	.000
N of Valid Cases	803		

A 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.89.

Table.18. The association of Ischaemic Heart Disease with median scores of the domains:

Heart disease		Satisfactory score	Orgasm score	Desire score	Overall score
no	Median	9.0000	7.0000	6.0000	8.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
yes	Median	6.0000	3.0000	5.0000	4.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	12.00	10.00	9.00	10.00
Total	Median	9.0000	7.0000	6.0000	7.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
Test Statistics (a)					
Mann-Whitney U		12437.500	9371.500	15236.000	8032.000
Wilcoxon W		14328.500	11262.500	17127.000	9923.000
Z		-5.882	-7.690	-4.297	-8.476
Asymp. Sig. (2-tailed)		.000	.000	.000	.000

a Grouping Variable: heart disease

Table.11. The association of Erectile Dysfunction with Depression

			Degree of ED				
			normal	mild	moderate	severe	**TOTAL**
depression	no	Count	263	100	145	209	717
		% within depression	36.7%	13.9%	20.2%	29.1%	100.0%
	yes	Count	19	17	15	35	86
		% within depression	22.1%	19.8%	17.4%	40.7%	100.0%
Total		Count	282	117	160	244	803
		% within depression	35.1%	14.6%	19.9%	30.4%	100.0%

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.107(a)	3	.018
Likelihood Ratio	10.303	3	.016
Linear-by-Linear Association	5.996	1	.014
N of Valid Cases	803		

A 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.53.

Table.19. The association of depression with median scores of the domains:

Depression		Satisfactory score	Orgasm score	Desire score	Overall score
no	Median	9.0000	7.0000	6.0000	7.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
yes	Median	9.0000	6.0000	6.0000	8.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	14.00	10.00	10.00	10.00
Total	Median	9.0000	7.0000	6.0000	7.0000
	Minimum	.00	.00	2.00	2.00
	Maximum	15.00	10.00	10.00	10.00
Test Statistics (a)					
Mann-Whitney U		27248.500	29008.000	28396.000	30504.500
Wilcoxon W		30989.500	32749.000	32137.000	34245.500
Z		-1.771	-.906	-1.212	-.162
Asymp. Sig. (2-tailed)		.077	.365	.225	.871

a Grouping Variable: depression

4.7. ASSOCIATION OF RISK FACTORS TO DOMAINS OF SEXUAL FUNCTION.

The association of risk factors above to the domains of sexual function are shown from Tables 12 to 19 together with the statistical analyses. In these tables, non parametric statistics were used namely the Kruskal-Wallis test for age group and the Mann –Whitney for other variables.

5. CHAPTER V: DISCUSSION

In this analytical cross-sectional study of a group of men attending an urban primary health care clinic in Kwa-Zulu Natal, South Africa an overall prevalence rate for erectile dysfunction was found to be 64.9%. Of the 803 valid responses, 14.6% (117) had mild erectile dysfunction, 19.9% (160) had moderate erectile dysfunction and 30.4% (244) had severe erectile dysfunction. (Table 3) The definition of erectile dysfunction used in this study was based on a cut-off score of 25 on the IIEF 15, as proposed by Rosen *et al*[45]. Englert *et.al* have also used this cut-off score in a prevalence study of men in a metropolitan area of Germany.[17]

The IIEF has been supported by rigorous, psychometric, cultural and linguistic validation.[43]

The study also revealed a significant association with erectile dysfunction and age, employment status and chronic conditions like diabetes, hypertension, ischemic heart disease, and depression. ($p< 0.05$) The association between erectile dysfunction and smoking could not be established as there was a high prevalence rate in both the smokers (61.1%) and non-smokers. (71%)

The overall prevalence of ED in this study (64.9%) was higher than that of the MMAS study[3] (52%) which comprised of men aged between 40 years and 70 years. This study involved men above 18 years of age and therefore assumes that there is a significant proportion of men outside the age range of 40 to 70 who suffer from erectile dysfunction. In this study the prevalence of ED in patients older than 40 years was found to be 39%. (310, n=803)

The prevalence of ED in some American countries range from 41.7% to 53.4% [3,13,49,50,51]. In Europe the range is from 5% in a Danish study[18] to 76.5% in a study in Finnland[52]. A Belgium study[53] reported a 69% ED prevalence while in Japan the prevalence of ED was found to be about 80%.[54]

The differences between the estimations found in the cited studies may be due to cultural differences in the perception and attitude towards ED among the respective populations.

Furthermore, the differences may also result from the methodology used in the studies since the techniques and definitions employed were not standardised. The prevalence rates in this study are consistent with those studies that used the same or similar questionnaire and a similar definition of erectile dysfunction.

Erectile dysfunction and Age

Although there is a wide variation in prevalence rates of ED throughout the world, there has been a consistent association of age to ED. A MMAS update demonstrated that ED incidence rates doubled with each decade.[49]

An interesting finding in the current study shows a higher prevalence rate in the 18 to 29 year age group (68.1%) than the 30 to 39 age group (44.7%) (Table 4). It is only after the age of 40 years that an exponential relationship between ED and increasing age exists (Table 4). The prevalence of erectile dysfunction within each age group did not increase with an exponential increase in age in this study.

Although the prevalence of erectile dysfunction in the above 70 age group was high (81%), a significant finding was that of a high prevalence rate in the 18-29 age group of 68%. The prevalence in the 30-39 age group was 45%. These results are consistent with that of Heruti *et al* who found a higher prevalence rate in the 25 – 28 year age group than the 29-34 year age group.[28]

There is a paucity in the literature concerning the prevalence of erectile dysfunction in the under 40 population. In the age group 18 – 29 years, it is expected that many experience more anxiety during intercourse as they are still looking for a partner, hence a tendency for psychogenic erectile

dysfunction. It is also in this age group that peer pressure is the highest and many stressors are prevalent as one seeks to find stability in life.

As one progress's to the next age group, a phase of settling in and stability is reached and the prevalence of erectile dysfunction decreases, further alluding to the psychogenic cause of erectile dysfunction. In the 30-39 year age group a steady partner is usually found and there is less likelihood of psychogenic erectile dysfunction.

Peer pressure and psychological stresses may be responsible for erectile dysfunction in the younger age group. The classification of erectile dysfunction mentioned earlier proposes a psychogenic cause of erectile dysfunction and it is likely that this group may have erectile dysfunction due to psychogenic causes. It is from the age of 40 years that organic factors play a larger role, when prevalence rates steadily increase according to age.

In this study, however, a higher prevalence of severe ED in the 60 – 69 age group (74.4%) was found compared to the 18 – 29 age group (24.9%). The degree of ED is thus age dependent. Age is the most important physiological factor strongly associated with ED[55].The difference in the prevalence between the age groups is significant in that physicians need to be aware of this problem and investigate sexual dysfunction in the young. While an organic cause is more common among elderly subjects, a psychogenic cause is an important aetiology of ED among young men.

Corona *et al*[56] have reported that sexual desire does not decline in the ageing male although it may steeply decline with aging in the patient's partner. In this study there was a highly significant difference in the median scores between the age groups for all the domains ($p<0.001$)
(Table 12).These findings differ with that of Corona *et al*, in that there is a decline in sexual desire, orgasm, and satisfaction as one gets older.

Erectile Dysfunction and Smoking

The association between smoking and erectile dysfunction has been suggested in some studies.[56,57] A practice-based study in Denmark reported a higher frequency of erectile dysfunction in smokers compared to non-smokers.[58]

In this study, an overall ED prevalence rate of 71 % was found in non smokers compared to 61.1% in smokers suggesting that there is no direct association between ED and smoking.(Chi squared linear by linear association >0.05) (Table 7) Although these results do indicate that smoking may be a risk factor for ED as was demonstrated in ED prospective trials in Brazil[59], Korea[47] and in the United States[60], the high prevalence of ED among non smokers may be related to other risk factors that non-smokers may have. In both groups the majority of ED sufferers had severe ED with 31.7% in the smoking group and 28.3 % in the non-smoking group.

The association between smoking and erectile function has been reported mainly in prevalence studies that have considerable weaknesses for elucidating the aetiology of ED.[50] In the MMAS, smoking was not associated with ED in the entire study population[49], but when the effect of smoking was confined to a subgroup of men without diabetes, heart disease or prostate disease, smoking doubled the risk of ED.[61]

The relationship between smoking and ED may be due to the relationship with vascular disease, which is thought to be a cause of ED.[62] Nicolosi *et al* have demonstrated a strong association between ED and smoking and the risk was dependent upon the amount of tobacco consumption.[63]

There was also no significant association between smoking and the other domains of sexual function. The mean scores for the other domains were similar for smokers and non smokers. (Table 15) Smoking did not affect the desire and overall satisfaction of men in this study.

Erectile dysfunction and Economic status

Consistent with the literature, erectile dysfunction in this study correlated inversely with economic status.[12,24,47] ED was more prevalent in men with a lower household income.

The prevalence of ED in subjects with an income less than R5000 per month was 67.1% compared to 50% in subjects with an income of more than R5000 per month. (Table 6) Although, all respondents indicated a household income, 48.9 % were formally unemployed. It is assumed that the income was from state assistance in the form of grants and pension or from the spouse. Amongst those that reported being unemployed, there was an ED prevalence rate of 71% compared to 59% in the employed group. It is thought that the psychological effects of unemployment plays a significant role in personal relationships.

The association between ED and socioeconomic status has not been well established.[50] Income has been inversely related to ED in some studies.[49,64,65,66] The effect of socioeconomic status on ED is partly mediated by lifestyle factors and medical conditions.[67] Higher socioeconomic status has been linked with better health.[68]

Erectile dysfunction and Chronic Medical Conditions

Various chronic disorders are associated with elevated rates of ED including depression, diabetes, hypertension and cardiovascular diseases.[15,27] ED is correlated with conditions that lead to endothelial dysfunction like hypertension, diabetes and cardiovascular disease.[3] ED may also be regarded as a sensitive indicator for the early signs of these conditions.[69] 7

Erectile dysfunction and Diabetes

The prevalence of ED in diabetic patients in this study was 77.3% with 60.8% having severe erectile dysfunction, a finding that was consistent with several studies.[15,28,70,71] The association using Pearson Chi Square tests ($p< 0.05$) was significant. (Table 8)

In a cross-sectional study[72] of 10000 Italian diabetic men, 36% reported ED. A Spanish study showed a very strong correlation between ED and Diabetes with a prevalence that was four times that for non diabetic men.[73] In a large study on diabetic men, 86.1% had some degree of erectile dysfunction.[71]

Although psychogenic factors such as performance anxiety and depression can contribute to its aetiology, erectile dysfunction in diabetic patients is principally related to organic causes like vasculogenic and neurogenic abnormalities.[74]

In an experimental study it was noted that diabetes can induce down regulation of gene and protein expression of neurotransmitters like nitric oxide synthase which may explain the association of erectile dysfunction with diabetes.[75]

The study also revealed a significant difference in the median scores for the other domains between diabetic and non diabetic subjects. ($p<0.05$) (Table16). The median scores for satisfaction, desire, orgasm and overall satisfaction in diabetic men were lower than that of non diabetic men. The implication of this is that it is not only erectile dysfunction that is affected by diabetes but male sexual function in totality that is negatively affected.

Erectile dysfunction and Hypertension

Hypertension is a known risk factor for erectile dysfunction.[71] Arterial narrowing and loss of elasticity secondary to hypertension interferes with the blood flow to the corpora cavernosa and can result in partial or complete loss of erection.

The results of this study is not unexpected with 81.1% of hypertensive patients reporting some degree of erectile dysfunction.(Table 9) In a German study, the prevalence of ED in hypertensive

patients was 36% compared to 19% in the overall population, and 16% in normotensives.[76] A study in Poland reported an ED prevalence of 67.8% in hypertensive patients.[70]

Compared to Diabetic patients, there was a lower prevalence of severe ED (41.8%). The high prevalence of ED in hypertension could not be attributed to the condition alone. It is known that antihypertensive medications do cause erectile dysfunction and in this study the role of antihypertensive medications in contributing to ED could not be established. This was not part of the study objectives and not incorporated into the questionnaire.

The other domains of sexual function also revealed lower median scores for hypertensive subjects compared to non hypertensive subjects.(Table17) A statistically significant difference was demonstrated, $P<0.05$. The role of antihypertensive drugs in the domains of sexual desire and orgasm requires further investigation.

Erectile dysfunction and Ischaemic Heart Disease

The prevalence of ED in subjects who had ischaemic heart disease was 95.1% whilst it was 62.4% in those not reporting ischaemic heart disease.(Table 10) Although ischaemic heart disease has been associated with ED in several studies[56,57,60,77], these figures are high.

This study relied on self reporting and it is therefore possible that subjects were unaware of the existence of heart disease and may have underreported this condition or they may have been asymptomatic or undiagnosed. Only 61 of the 803 participants reported a history of heart disease.

The association of ischaemic heart disease to ED is thought to be related to the resemblance of coronary arteries to cavernous arteries in that both are end arteries without collateral circulation.[71] There was also a significant difference in the median scores for the other domains. (Table 18).

The frequent co-morbidity of multiple metabolic and haemodynamic abnormalities in the aging population can increase the incidence and progression of atherosclerosis, leading to vascular forms of ED.[56] The data from this study suggest a greater impact of vascular lesions in the pathogenesis of ED in elderly patients, confirming previous reports.[3,78,79,80]

Erectile dysfunction and Depression

The prevalence of ED in subjects reporting a previous history of depression was 77.9 % (Table 11). The association of depression with ED has been documented previously.[3,78,81]Although the correlation between ED and depression is well documented, the causal relation between both is sometimes inaccurate and most likely bidirectional, that is ED can accompany depression or depression itself can result from such sexual dysfunction.[82] Depressive symptoms could therefore contribute to the increased prevalence of ED.[56]

An interesting finding of this study was the non-significant difference in the median scores for the other domains of sexual function**.**(Table 19) It appears that these subjects had predominantly erectile difficulties without a significant difference in desire, orgasm and overall satisfaction. The role of antidepressants was not explored and may be a basis for further studies.

5.1 BIAS AND LIMITATIONS

To evaluate the different categories of erectile dysfunction and ED, the IEFF 15 questionnaire is long and may not be practical in general practice. The shorter IEFF 5 version is more appropriate. However, for the purpose of epidemiological data, a standardised questionnaire should be used.

It was thought that the sensitive nature of the questions may limit participation. However, the desired sample size was achieved in this study. It is assumed that the incomplete questionnaires may have been due to a reluctance to answer sensitive questions. As the study was conducted anonymously, participants who did not answer every question could not be contacted again.

The cross sectional design involving collection of data from self completed questionnaires, only allowed for assessment of medical conditions limited to self report. This may have resulted in underreporting of undiagnosed medical conditions that are asymptomatic.

6. CHAPTER VI: RECOMMENDATIONS AND CONCLUSIONS

6.1 INTRODUCTION

The need for epidemiological studies on sexual disorders is increasing because such conditions may precede a metabolic syndrome of hypertension, diabetes and obesity, whose impacted population is growing rapidly. The early diagnosis of sexual disorders is thought to contribute to the prevention and treatment of metabolic syndrome.[47]

6.2 CONCLUSIONS

The prevalence of erectile dysfunction in this study was 64.9%, a significantly high prevalence rate for the urban primary health care clinic. This high prevalence rate indicates there is a need to focus and manage patients with erectile dysfunction. Primary health care physicians will become more aware of the problem and offer more appropriate therapy.

The significant association of erectile dysfunction with chronic conditions is important in that a complication of these conditions can now be addressed and managed. The result will be an improvement in the quality of lives of patients. The identification of erectile dysfunction as a risk factor for the co-morbid conditions will also serve as an indicator for the detection of conditions that were previously undiagnosed.

Erectile dysfunction is only part of overall sexual function and this study has also demonstrated that other areas of sexual function like orgasm, desire and overall satisfaction are also a common problem that is associated with co-morbid conditions.

6.3 RECOMMENDATIONS

Most experts in the field of sexual medicine believe that erectile (sexual) dysfunctions are multi determined conditions, with biological, psychological and rational or interpersonal elements playing some role in their aetiology. Therefore, any valid taxonomic system must be bio psychosocial in nature but retain the capacity to identify distinct subtypes of clinical presentations based upon primary causal agents.

In the past decade, the field of sexual medicine has made huge strides both scientifically and clinically. In understanding the mechanism of penile erection, the area of erectile physiology has made significant advances in the development of effective therapy. In looking towards the future, research of sexual disorders in both men and women remained a challenge, especially the controversies unique to the study of sexual matters. Substantive scientific discovery and progress will depend on the production of high quality scientific work in all areas of the field.

In view of the high prevalence of ED in men visiting the primary health care clinic, a short algorithm based procedure should be added to the routine patient examination.

There is a need for a standardised, concise questionnaire to uniformly assess erectile dysfunction and to make prevalence rates comparable across studies. Comparability of the published prevalence rates is important to assess the epidemiological magnitude of erectile dysfunction in order to develop therapeutic strategies.

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APPENDIX 'A'
ERECTILE DYSFUNCTION STUDY QUESTIONNAIRE- ENGLISH

PLEASE COMPLETE ALL QUESTIONS BY CROSSING THE RELEVANT BLOCKS OR FILL IN ANSWERS IN BLANK BLOCKS

A: DEMOGRAPHIC DETAILS
The following questions are general questions:

1. STUDY NUMBER :	

2. WHICH AGE GROUP DO YOU BELONG TO?

18-29	30-39	40-49	50-59	60-69	70 +

ACTUAL AGE	

3. OCCUPATION:

EMPLOYED		UNEMPLOYED	

4. INCOME :

LESS R5000-00		MORE R5000-00	

5. DO YOU SMOKE?

YES		NO		HAVE YOU EVER SMOKED?	

IF YES , HOW LONG AGO DID YOU STOP	

6. DO YOU SUFFER FROM ANY OF THE FOLLOWING:

DIABETES		HIGH BLOOD PRESSURE		HIGH CHOLESTEROL	
PROSTATE DISEASE		ISCHAEMIC HEART DISEASE		PELVIC INJURIES	
DEPRESSION		OTHER			

7. ARE YOU BEING TREATED FOR ANY OF THE ABOVE

YES		NO	

IIEF QUESTIONNAIRE

These questions ask about the effects your erection problems have had on your sex life over the past 4 weeks. Please answer the following questions honestly and clearly as possible. In answering these questions, the following definitions apply:

- sexual activity includes intercourse, caressing, foreplay and masturbation
- sexual intercourse is defined as vaginal penetration of the partner (you entered your partner)
- sexual stimulation includes situations like foreplay with a partner, looking at erotic pictures etc
- ejaculate: the ejection of semen from the penis (or the feeling of this)

1. Over the past 4 weeks, how often were you able to get an erection during sexual activity? Please cross one box only.

	No sexual activity
	Almost always / always
	Most times (much more than half the time)
	Sometimes (about half the time)
	A few times (much less than half the time)
	Almost never / never

2. Over the past 4 weeks, when you had erections with sexual stimulation, how often

   Were your erections hard enough for penetration? Please cross one box only.

	No sexual activity
	Almost always / always
	Most times (much more than half the time)
	Sometimes (about half the time)
	A few times (much less than half the time)
	Almost never / never

The next three questions will ask about the erections you may have had during sexual intercourse.

3. Over the past 4 weeks, when you attempted sexual intercourse, how often were you able to penetrate (enter) your partner? Please cross one box only.

	Did not attempt intercourse
	Almost always / always
	Most times (much more than half the time)
	Sometimes (about half the time)
	A few times (much less than half the time)
	Almost never / never

4. Over the past 4 weeks, during sexual intercourse, how often were you able to maintain your erection after you had penetrated (entered) your partner? Please cross one box only.

	Did not attempt intercourse
	Almost always / always
	Most times (much more than half the time)
	Sometimes (about half the time)
	A few times (much less than half the time)
	Almost never / never

5. Over the past 4 weeks, during sexual intercourse, how difficult was it to maintain your erection to completion of intercourse? Please cross one box only.

	Did not attempt intercourse
	Not difficult
	Slightly difficult
	Difficult
	Very difficult
	Extremely difficult

6. Over the past 4 weeks, how many times have you attempted sexual intercourse? Please cross one box only.

	No attempts
	Eleven + attempts
	Seven to ten attempts
	Five to six attempts
	Three to four attempts
	One to two attempts

7. Over the past 4 weeks, when you attempted sexual intercourse, how often was it satisfactory for you? Please cross one box only.

	Did not attempt intercourse
	Almost always / always
	Most times (much more than half the time)
	Sometimes (about half the time)
	A few times (much less than half the time)
	Almost never / never

8. Over the past 4 weeks, how much have you enjoyed sexual intercourse? Please cross one box only.

	No intercourse
	Very highly enjoyable
	Highly enjoyable
	Fairly enjoyable
	Not very enjoyable
	No enjoyment

9. Over the past 4 weeks, when you had sexual stimulation or intercourse, how often did you ejaculate? Please cross one box only.

	No sexual stimulation / intercourse
	Almost always / always
	Most times (much more than half the time)
	Sometimes (about half the time)
	A few times (much less than half the time)
	Almost never / never

10. Over the past 4 weeks, when you had sexual stimulation or intercourse, how often did you have the feeling of orgasm (with or without ejaculation?) Please cross one box only.

	No sexual stimulation / intercourse
	Almost always / always
	Most times (much more than half the time)
	Sometimes (about half the time)
	A few times (much less than half the time)
	Almost never / never

The next two questions ask about desire. Let's define sexual desire as a feeling that may include wanting to have sexual experience (for example masturbation or intercourse), thinking about having sex, or feeling frustrated due to lack of sex.

11. Over the past 4 weeks, how often have you felt sexual desire? Please cross one box only.

	Almost always / always
	Most times (much more than half the time)
	Sometimes (about half the time)
	A few times (much less than half the time)
	Almost never / never

12. Over the past 4 weeks, how would you rate your level of sexual desire? Please cross one box only.

	Very high
	High
	Moderate
	Low
	Very low or none at all

13. Over the past 4 weeks, how satisfied have you been with your overall sex life? Please cross one box only.

	Very satisfied
	Moderately satisfied
	About equally satisfied and dissatisfied
	Moderately dissatisfied
	Very dissatisfied

14. Over the past 4 weeks, how satisfied have you been with your sexual relationship with your partner? Please cross one box only.

	Very satisfied
	Moderately satisfied
	About equally satisfied and dissatisfied
	Moderately dissatisfied
	Very dissatisfied

15. Over the past 4 weeks, how do you rate your confidence that you can get and keep your erection? Please cross one box only.

	Very high
	High
	Moderate
	Low
	Very low

IMIBUZO - ISIZULU

UCWANINGO NGEZINKINGA ZOKUNGAVUKELWA.
UYACELWA UKUBA UGCWALISE YONKE IMIBUZO NGOKWENZA IZIMPAWU EZIYIZO EZIKWELENI NOMA UGCWALISE EZIKHALENI EZINGENALUTHO

A. IMININGWANE NGAWE.
Le mibuzo elandelayo iyimibuzo ejwayelekile.

1.INOMBOLO YOCWANINGO

2. NGABE UPHAKATHI KWAMIPHI IMINYAKA YOBUDALA:

18 - 29		30 - 39		40 - 49		50 - 59		60 – 69		70 +	

IMINYAKA YAKHO YANGEMPELA:	

3. OKWENZAYO/ UMSEBENZI

UMSEBENZI		**AWUSEBENZI**	

4. IMALI ENGENAYO

NGAPHANSI KUKA-R5000.00		NGAPHEZU KUKA R5000.00

5. NGABE UYABHEMA?

YEBO	

CHA	
NGAKUBE SEWAKE WABHEMA	
UMA UTHI YEBO, WAYEKA NINI?	

6. NGABE SIKHONA ISIFO ESIKUPHETHE KULEZI EZILANDELAYO:

ISIFO SIKASHUKELA	
YISIFO SENHLIZIYO	
ISIFO SAMASENDE	
YISIFO SOMFUTHO OPHEZULU WEGAZI NGAMANDLA KWEGAZI	
YISIFO SOKUBA NENGCINDEZI	
YISIFO SAMAFUTHA APHEZULU	
UKULIMALA KWEZINXONXO	
OKUNYE	

7. NGABE SIKHONA ISIFO OLASHELWA SONA KULEZI EZINGENHLA?

YEBO		CHA	

IIEF QUESTIONNAIRE ISI ZULU VERSION

Le mibuzo elandelayo ibuza ngezinkinga osuhlangabezane nazo ezibangelwe wukungavukelwa empilweni yako yezocansi esikhathini esingamasonto amane edlule.

Uyacelwa ukuba uphendule le mibuzo elandelayo ngokwethembeka nangokucacile.

Ekuphenduleni le mibuzo, kunale ncazelo elandelayo:

- **Izenzo zocansi** kuhlanganisa ukwenza ucansi, ukuwotawotana, ukuthintathintana ngenhloso yokuvusa imizwa nokushaya indlwabu.
- **Ukwenza ucansi** kuchazwa njengokuhlangana kwezitho zangasese phakathi kowesilisa nowesifazane.
- **Ukuvusana imizwa** kuhlanganisa ukuthintathintana nomlingani wakhoI, ukubuka izithombe eziqhenyelisayo njll..
- **Ukuthunda:** ukuphuma ngamandla kwesidoda esithweni sowesilisa (noma umuzwa walokhu)

1. **Emasontweni amane edlule,** kukangakanani lapho wawukwazi ukuthi uvukelwe ngesikhathi sokwenza ucansi? uyacelwa ukuba ubeke uphawu ebhokisini elilodwa kuphela.

l Angikaze ngilwenze ucansi
l Cishe njalo / ngazo zonke izikhathi
l Izikhathi eziningi (ngaphezu kwesigamu)
l Ngezinye izikhathi (cishe isikhathi esiyisigamu)
l Kukambalwa (izikhathi ezingaphansi kakhulu kwesigamu)
l Cishe akukaze kwenzeke/ akukaze .

2. **Emasontweni amane edlule,** ngesikhathi uvukelwa ngenxa yokuvuswa kwemiswa, kukangaki lapho wavukelwa induku yaqina ngokwanele ukuthi ingene kowesifazane? Uyacelwa ukuba ubeke uphawu ebhokisini elilodwa kuphela.

l Angikaze ngizibandakanye nocansi
l Cishe njalo / ngazo zonke izikhathi
l Izikhathi eziningi (ngaphezu kwesigamu)
l Ngezinye nje izikhathi (cishe isikhathi esiyisigamu)
l Kukambalwa/ izikhathi ezingaphansi kakhulu kwesigamu
l Cishe akukaze kwenzeke/ akukaze .

Le mibuzo emithathu elandelayo izobuza ngokuvukelwa okungenzeka ukuthi ube nakho ngesikhathi sokwenza ucansi.

3. **Emasontweni amane edlule,** ngesikhathi ulinga ukwenza ucansi, kukangaki lapho wakwazi ukufaka isitho sakho kwesomlingani wakho? Uyacelwa ukuba ubeke uphawuI ebhokisini elilodwa kuphela.

l Angikaze ngikuzame ukwenza ucansi
lCishe njalo / njalo
l Izikhathi eziningi (ngaphezu kwesigamu)
l Ngezinye izikhathi (cishe isikhathi esiyisigamu)
l Kukambalwa/ izikhathi ezingaphansi kakhulu kwesigamu
l Akwenzeki/ akukaze.

4. **Emasontweni amane edlule,** ngesikhathi sokwenza ucansi, kukangaki lapho wakwazi khona ukugcina induku yakho iqinile emva kokuyifaka kumlingani wakho? Uyacelwa ukuba ubeke uphawu ebhokisini elilodwa kuphela.

l Angikaze ngizame ukwenza ucansi
l Cishe njalo / njalo
l Izikhathi eziningi (ngaphezu kwesigamu)
l Ngezinye izikhathi (cishe isikhathi esiyisigamu)
l Kukambalwa/ izikhathi ezingaphansi kakhulu kwesigamu
l Akwenzeki/ akukaze.

5. **Emasontweni amane edlule,** ngesikhathi wenza ucansi, kwaba nzima kangakanani ukugcina induku yakho iqinile uze ufike esikhathini sokuthi uthunde? Uyacelwa ukuba ubeke uphawu ebhokisini elilodwa kuphela.

l Angikaze ngizame ukwenza ucansi
l Akubanga nzima
l Kube nzima kancane
l Kube nzima
l Kube nzima impela
l Kube nzima kakhula

6. **Emasontweni amane edlule,** kukangaki lapho uke wazama khona ukwenza ucansi? Uyacelwa ukuba ubeke uphawu ebhokisini elilodwa kuphela.

l Angikaze ngizame
l Kungaphezu kweshumi nanye
l Kasikhombisa kuya eshumini
l Kahlanu noma kasithupha
l Kathathu noma kane
l Kanye noma kabili

7. **Emasontweni amane edlule**, ngesikhathi uzama ukwenza ucansi , kukangaki lapho uneliseke ngempela khona? Uyacelwa ukuba ubeke uphawu ebhokisini elilodwa kuphela.

l Angikaze ngizame
l Cishe njalo / ngazo zonke izikhathi
l Izikhathi eziningi (ngaphezu kwesigamu)
l Ngezinye izikhathi (cishe iiskhathi esiyisigamu)
l Kukambalwa (ngaphansi kwesigamu)
l Cishe akukaze kwenzeke / akukaze .

8. **Emasontweni amane edlule,** kukangaki lapho uthokozele khona ucansi? Uyacelwa ukuba ubeke uphawu ebhokisini elilodwa kuphela.

l Angikaze ngilwenze ucansi
l Ngiluthokozele kakhulu impela
l Ngiluthokozele kakhulu
l Ngilujabulele nje
l Angiluthokozelanga kangako
l Angiluthokozelanga nhlobo

9. **Emasontweni amane edlule,** ngesikhathi uvukelwa ngokuthintwathintwa noma ngocansi , kukangaki lapho ukwazile ukuthunda khona? Uyacelwa ukuba ubeke uphawu ebhokisini elilodwa.

l Angikaze ngithintwathintwe / noma ngenze ucansi
l Cishe njalo / njalo
l Izikhathi eziningi (ngaphezu kwesigamu)
l Ngezinye izikhathi (cishe isikhathi esiyisigamu)
l Kukambalwa/ izikhathi ezingaphansi kwesigamu
l Cishe akunkaze kwenzeke/ akukaze kwenzeke.

10. **Emasontweni amane edlule** ngesikhathi uvukelwa ngokuthintwathintwa noma ngocansi, kukangaki lapho imizwa yakho iloleka ngamadla khona (noma ngabe uthundile noma ungathundanga)? Uyacelwa ukuba ubeke uphawu ebhokisini elilodwa kuphela.

l Angikaze ngithintwathintwe / noma ngenze ucansi
l Cishe njalo / njalo
l Izikhathi eziningi (ngaphezu kwesigamu)
l Ngezinye nje izikhathi (cishe isikhathi esiyisigamu)
l Kukambalwa/ izikhathi ezingaphansi kwesigamu
l Cishe akunkaze kwenzeke/ akukaze kwenzeke

Le mibuzo emibili elandelayo ibuza mayelana nokulangazelela noma ukukhanuka. Ake sichaze ngenkanuko njemgomuzwa obandakanya umuzwa wokufuna ukwenza ucansi (isibonelo njengokushaya indlwabu noma ukwenza ucansi), ngokucabanga ngokwenza ucansi noma ukuzizwa udunyelwa yikhanda ngenxa yokulenzi ucansi.

11. **Emasontweni amane edlule,** kukangaki lapho uke waba nokulangazelela ucansi. Uyacelwa ukuba ubeke uphawu ebhokisini elilodwa kuphela.

l Cishe zonke izikhathi / Njalo
l Izikhathi eziningi (ngaphezu kwesigamu)
l Ngezinye izikhathi (cishe ingxenye)
l Kukambalwa/ Izikhathi ezingaphansi kwesigamu
l Cishe akunkaze kwenzeke/ akukaze kwenzeke

12. **Emasontweni amane edlule**, ungalilinganisa kangakanani izinga lakho lokulangazelela ucansi? Uyacelwa ukuba ubeke uphawu ebhokisini elilodwa kuphela.

l Liphezulu kakhulu
l Liphezulu
l Liphakathi nendawo
l Liphansi
l Liphansi kakhulu/ angilulangazeleli nhlobo

13. **Emasontweni amane edlule**, uneliseke kangakanani ngempilo yakho kwezocansi? Uyacelwa ukuba ubeke uphawu ebhokisini elilodwa kuphela.

l Ngineliseke kakhulu
l Nginelisekile nje ngokulingene nokungeneliseki
l Ngiphakathi nendawo
l Anginelisekile kangako
l Anginelisekile nhlobo

14. **Emasontweni amane edlule,** uneliseke kangakanani ngobudlelwano bakho nomlingani wakho ngakwezocansi? Uyacelwa ukuba ubeke uphawu ebhokisini elilodwa kuphela.

l Ngineliseke kakhulu
l Ngineliseke nje ngokulingene nokungeneliseke
l Ngiphakathi nendawo
l Anginelisekile kangako
l Anginelisekile nhlobo

15. **Emasontweni amane edlule**, ukulinganisa kangakanani ukuzigqaja kwakho ngokuthi ungakwazi ukugcina induku yakho iqinile?. Uyacelwa ukuba ubeke uphawu ebhokisini elilodwa kuphela.

l Kuphezulu kakhulu
l Kuphezulu
l Kuphakathi nendawo
l Kuphansi
l Kuphansi kakhulu

APPENDIX

INFORMED CONSENT FORM - ENGLISH

Consent to Participate in Research

You have been invited to participate in this research study, the details of which have been explained to you by myself, Dr Yusuf Lockhat. An information leaflet about this study (in English and in isiZulu) has been given to you and the details of the study and your involvement has also been verbally explained to you by myself and the Nursing Sister in the Clinic.

You may contact me at Tel No. 031 4672827 (H) or 0833505829 (cell) at any time if you have questions about the research.

You may contact the Medical Research Office at the Nelson R Mandela School of Medicine at TELEPHONE : 031 260 4604 If you have questions about your rights as a research subject.

Your participation in this research is voluntary, and you will not be penalized or lose benefits if you refuse to participate or decide to stop at any point in this study. If you find that some of the questions are too sensitive, you may discontinue participation at anytime.

If you agree to participate, please sign this document and you may keep the participant information sheet which is a written summary of the research. Your confidentiality and anonymity will be maintained at all times.

Freedom of Consent

I agree to voluntarily participate in this research programme. I understand that I can stop participating in this programme at any time I may wish without giving any explanation or being prejudiced in any way.

I acknowledge that I have read this form in its entirety or it has been read to me or its entire contents have been explained to me, and I understand my responsibility in the research programme in which I will be participating. I accept the risks, rules and regulations set forth. Knowing these, and having had the opportunity to ask questions which have been answered to my satisfaction, I consent to participate in this research programme.

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Signature of Participant Date

(Please print your name)

---------- ----------

Signature of Witness Date

IFOMU LESIVUMELWANO SOCWANINGO

ISIVUMELWANO SOKUBAMBA IQHAZA OCWANINGENI

Mina Dokotela Yusuf Lockhat ngiyakumema ukuba ubambe iqhaza kulolu cwaningo, kanti futhi unikeziwe nepheshana elinolwazi ngalolu cwaningo (ngesiNgisi nangesiZulu) kanye nemininingwane yocwaningo kanti nokuzibandakanya kwakho kulolu cwaningo uchazelwe kona nguMhlengikazi Omkhulu wasemtholampilo wami..

Ungangithinta enombolweni ethi: 031 467 2827 (ngezikhathi zomsebenzi) noma kumakhalekhukhwini othi 0833505829 noma nini uma unemibuzo mayelana nocwaningo noma uma ulimala ngenxa yocwaningo. Ungaxhumana neHhovisi Lezocwaningo Ngezokwelapha (Medical Research Office) e-Nelson R Mandela School of Medicine enombolweni ethi: 031 260 4604

Ukubamba kwakho iqhaza kulolu cwaningo kungokuzithandela. Kanti futhi ngeke ujeziswe noma ulahlekelwe ngamalungelo akho uma unqaba noma ukhetha ukushiya noma nini ocwaningeni. Uma uvuma ukubamba iqhaza, uyacelwa ukuba usayine leli fomu kanti ungaligcina ipheshana eliqukethe incazelo mayelana nocwaningo.

INKULULEKO YOKUVUMA

Ngiyavuma ukubamba iqhaza ngokuzikhethela kulolu hlelo locwaningo. Ngiyaqonda ukuthi ngingakwazi ukuyeka kulolu hlelo noma nini uma ngithanda ngaphandle kokuchaza kabanzi noma ukushushiswa kwanoma yiyiphi indlela.

Ngiyavuma futhi ukuthi ngilifundile leli fomu ngilifunde/ ngilifundelwe lonke futhi ngicaciselwe ngakho konke okuqukethwe kulo kanti ngiyakuqonda okuwumgidlabezo/umsebenzi wami ohlelweni locwaningo engizobamba kulo iqhaza. Ngiyabemukela ubungozi, imithetho nemitheshwana ebekiwe. Ngokwazi lokhu, kanye nokuba nethuba lokubuza imibuzo ephendulwe ngendlela engigculisayo, ngiyavuma ukubamba iqhaza kulolu hlelo locwaningo.

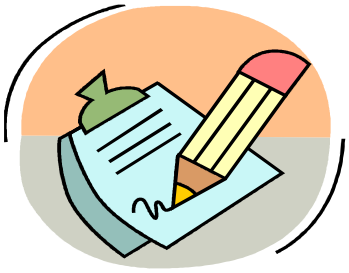
---------- ----------

Isishicilelo sobambe iqhaza Usuku

(Uyacelwa ukuba ubhale amagama aphelele)

---------- ----------

Isishicilelo sikafakazi Usuku



SIPHIMFUNDO-TRANSLATION EDITING AND INTERPRETING SERVICES cc.

2007/001203/23

Postal Address:	**Contact details**	**E-mail Address**
67B Manor Drive, Glenwood, 4001	072 2089 325 or 076 3333 687	neliza2001@yahoo.com or sibiyas1@ukzn.ac.za

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24 July 2007

Ref.: Dr. Y.M. Lockhat

To Whom It May Concern

This letter serves to confirm that I, Neli Ntshangase have proofread Zulu translation questionnaires on **22 June 2007**.

For further information, please contact me at the above contact details.

Regards

Neli Ntshangase

TO ADD FOLLOWING.

LETTER FROM DK NAIDOO-PERMISSION TO STUDY

LETTER FROM DISTRICT MANAGER FOR RESEARCH AT ADDINGTON HOSPITAL.

BIOMEDICAL RESEARCH ETHICS ADMIN,RESEARCH OFFICE APPROVAL

UNIVERSITY OF
KWAZULU-NATAL

24 April 2007

Dr S Rangiah
Family Medicine
ADDINGTON HOSPITAL

Dear Dr Rangiah

PROTOCOL : A study investigating the prevalence of erectile dysfunction in a primary health care clinic in KwaZulu-Natal. Y M Lockhat, MMedFam Med Family Medicine. Student number 963116642

Ref.: PG05/06

The Postgraduate Education Committee ratified the approval of the abovementioned study on 15 May 2007

Please note :

- the Postgraduate Education Committee must review any changes made to this study.
- the study may not begin without the approval of the Ethics Committee.

May I take this opportunity to wish the student every success with the study.

Yours sincerely

PROFESSOR P MOODLEY
Chair : Postgraduate Education Committee

cc Dr YM Lockhat.

Postgraduate Education Administration,
Medical School Campus

Postal Address: Private Bag 7, Congella, 4013, South Africa

ephone: +27 (0)31 260 4416 **Facsimile:** +27 (0)31 260 4723 **Email:** [redacted] **Website:** www.ukzn.ac.za

Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville