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ORIGINAL ARTICLE

Impact of a weight loss programme on psychological wellbeing and quality of life

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Background

Prevalent conditions nowadays include mental disorders such as depression and anxiety as well as obesity which often co-exist together. Mental disorders may predispose individuals to gain weight through less exercise, increased stress hormones and binge-eating, whilst inversely obesity may lead to mental disorders through increased stress, low support and less independent functioning in everyday life. The aim of this study was to measure different parameters reflecting the psychological and mental wellbeing of individuals before and after completing a weight loss residential program at 'Dar Kenn Ghal Sahhtek'.

Method

A study was conducted on 36 individuals who enrolled into an 8-week program at 'Dar Kenn Ghal Sahhtek'. Parameters including age, gender, body mass index, levels of quality of life, depression and anxiety were collected upon admission and discharge. Statistical analysis was carried out on the data collected to compare the before and after data as well as check for any correlations between different parameters.

Results and Conclusion

From this study it was concluded that there is a statistical difference between the before and after data and that a significant decrease in all parameters was recorded upon completion of the program. Furthermore, a positive correlation was found between Beck's Depression scale and other parameters which confirms simultaneous causality between the different parameters.

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Mental disorders such as depression and anxiety have become a consistently prevailing issue in healthcare worldwide. These conditions may often coincide with Obesity which is another prevalent health concern.[1,2] The prevalence of obesity and overweight individuals in adults aged 18 years and older has trebled in the past 40 years and globally surpasses 37% of all adults.[3] In Malta adolescents and children have reportedly one of the highest prevalence of obesity and overweight individuals in the world.[4] According to statistics published by the National Statistics Office 25.5% of the Maltese population are obese which is significantly higher when compared to the 14.9% EU average. Statistics also show that the percentage of Maltese men who are obese is 27.5% whilst the percentage for women is 23.4%.[5] This is also supported by Malta having one of the highest prevalence of obesity in the European region as identified in studies by the World Health Organization.[4]

Mental disorders, predominantly depression and anxiety, are often diagnosed in obese and overweight individuals. This relationship between mental disorders and obesity has been noted to be especially common in adolescents and young adults.[3,6] An increased incidence of generalised anxiety disorder, panic disorder with and without agoraphobia and social phobia have been reported in obese and overweight individuals.[7]

The relationship between high Body Mass Index (BMI) and poor mental health may arise from several different origins and is often bidirectional in causality. People who have a BMI of more than 30 are usually observed to have a lower self-esteem, less support from people around them and usually suffer from multiple medical comorbidities such as hypertension, diabetes, joint problems and dyslipidaemia.[8] All these factors will contribute to increased emotional stress and decreased physical functioning, which may accumulate over time making them more vulnerable to mood disorders.[7]

In turn, mood disorders such as depression and stress have been associated with an increase in visceral fat accumulation and abdominal obesity.[9,10] Such patients tend to suffer from a binge-eating disorders and are less likely to be physically active due to their low mood. There may also be a physiological explanation as stress hormone cortisol levels have been found to be higher in patients who suffer from anxiety, Post Traumatic Stress Disorder (PTSD) and depression. This may in turn lead to increased levels of neuropeptide Y which cause an increase in food intake, aggravated further by low levels of Leptin (which usually acts as an appetite suppressant).[9] Furthermore patients who do suffer from mood disorders are often on antidepressants or atypical antipsychotics and weight gain is a common side effect of these medications.[11]

In Malta 'Dar Kenn Ghal Sahhtek' is a dedicated centre set up in 2014 for treating patients with eating disorders, including Obesity and Binge eating. It offers both residential and semi-residential facilities where patients suffering from obesity can enrol into a holistic weight reduction programme. During these programmes patients are guided by a multidisciplinary team consisting of psychiatrists, doctors, nurses, physiotherapists and psychologists in order to adopt a healthier lifestyle.[12] The goals of such a programme involve weight reduction to reach a healthy BMI, improved mental health and an overall better way of living.

METHOD

This retrospective study was conducted on a sample of anonymous records of 163 individuals who enrolled into the residential programme at 'Dar Kenn Ghal Sahhtek' between October 2014 and February 2017. The duration of the programme was 8 weeks, after which patients were followed up on an outpatient basis once weekly for a total period of 2 months. After this period, patients could join support group sessions which were held on a monthly basis. A study to analyse the impact and efficacy of this programme on the physical wellbeing of the participants has already been established in a separate study.[13] In this current study we analyse the impact this programme may have on the psychological aspects and quality of life of the participants.

On admission a set of parameters were recorded along with demographic data. These included;

- Demographic Data : Age , Gender
- Weight and Body Mass Index (BMI)
- Eating Disorder Quality of Life assessment (EDQOL)(15)
- Becks Depression Index scale (BDI)
- General Anxiety Disorder 7 item scale (GAD – 7)(16)

These parameters were repeated and documented upon discharge from the programme.

Statistical analysis on the data collected involved comparing the BMI, GAD, BDI and QOL taken on

admission and those noted down on discharge by using Wilcoxon signed-rank test. This type of paired difference test was used since the data collected from the sample was found not to be in normal distribution after using the Shapiro-Wilk test.

Such statistics compare and see if there is any significant difference between the means of the two groups; the before and after data for each different parameter.

Spearman's coefficient was also used to check for a positive or negative correlation between the different parameters measured.

RESULTS

A sample of 36 individuals was used for this study, which included 17 males and 19 females. These 36 individuals were chosen because they had complete data documented both at admission and follow up. Ages ranged from 19 to 67 years of age for male subjects and 15 to 69 years of age for female subjects. Values for weights of subjects taken before they entered the program ranged from 82 to 208 kgs for the male subjects and 90 to 188 kgs for the female subjects. BMI values taken before starting the program extended from 35.09 to 72.04 for the male participants and 32.47 to 82.02 for the female participants.

From the data analysis carried out, a significant statistical difference was found between the means of the Before and After data sets for each parameter, where the p value obtained by Wilcoxon signed rank test was less than 0.05 for each data set and therefore rejecting the null hypothesis (p=0.001, Z=-3.29) (Table 1). For Weight BMI, BDI score, GAD score and QOL score, a significant decrease was noted between the means of Before and After data sets (Table 1).

Using Spearman's coefficient, a moderative positive correlation was noted between BDI-Before and Weight-Before (ρ=0.53) and a moderate-weak positive correlation was obtained between BDI-Before and BMI-Before data sets (ρ=0.47). A stronger positive correlation was noted between BDI-Before and GAD-Before (ρ=0.66) and BDI-Before and QOL-Before data sets (ρ=0.72). Similarly a strong positive correlation was calculated between BDI-After and GAD-After (ρ=0.61) and BDI-After and QOL-After (ρ=0.78) (Table 2). When applying Spearman's rank correlation between GAD and QOL for both Before and After data sets, a weak-moderate positive correlation was noted (Before; ρ=0.43, After; ρ=0.47) (Table 3).

DISCUSSION

The results obtained after the participants completed the residential programme show a positive outcome. The Before and After data sets showed a significant reduction for all the different parameters. A considerable decrease can be noted in the Weight After the program when compared to the Weight taken Before the start of the program. Likewise the mean BMI, mean BDI score, mean GAD score and mean QOL scores significantly decrease

Table 1 *Descriptive statistics for the Before and After data sets collected for each different parameter and p values obtained for Wilcoxon signed rank test*

	N	Minimum	Maximum	Mean	Standard deviation	p
Age	36	15.0	69.0	42.7	14.7	
Weight Before	36	82.1	208.2	140.5	36.5	***<0.001***
Weight After	36	74.5	192.8	132.4	34.1	
BMI Before	36	32.5	82.0	52.3	12.1	***<0.001***
BMI After	36	31.4	79.1	49.3	11.4	
BDI-B	36	7.0	56.0	29.3	13.9	***<0.001***
BDI-A	36	1.0	48.0	14.5	13.7	
GAD-B	36	2.0	23.0	13.2	6.6	***<0.001***
GAD-A	36	0	41.0	8.1	9.6	
QOL-B	36	1.0	70.0	30.9	20.9	***<0.001***
QOL-A	36	0	37.0	10.6	10.5	

Table 2 *Correlations between Beck's Depression Index Before and After and different parameters using Spearman's rank correlation coefficient*

	Weight-B	BMI-B	GAD-B	QOL-B	GAD-A	QOL-A
BDI-B	0.53	0.47	0.66	0.72	0.19	0.32
BDI-A	0.08	0.04	0.1	0.12	0.61	0.76

Table 3 *Correlations between Generalised Anxiety Scale -7 (Before and After) and Quality of Life scale (Before and After) using Spearman's rank correlation coefficient*

	QOL-B	QOL-A
GAD-B	0.43	0.16
GAD-A	0.08	0.47

after completion of the residential program (Table 1). This shows that the residential program is a fruitful one resulting in loss of weight, a decrease in scores for Depression a decrease in scores for Anxiety and a decrease in the scores of Quality of Life (where a low score represents a good QOL).

A moderate positive correlation between Weight and BMI (taken before programme was commenced) and scores for BDI- Before was noted (Table 2). This portrays that an increase in weight and BMI will affect the score a patient will get on Beck's Depression scale. Since a positive correlation was obtained, then an increase in Weight or BMI will both have an effect and result in an increased score on Beck's Depression scale which increases the chances of that particular patient to suffer from depression and low mood. A stronger positive correlation was found between scores for BDI-Before and the scores for GAD-Before and QOL-Before respectively. This shows that a higher score in Beck's Depression Scale will affect both anxiety and quality of life of a patient, leading to an increased level of anxiety and poorer quality of life for the patient. Similarly scores between BDI-After and GAD-After and QOL-After respectively also show a strong positive correlation, further confirming the effect one's mood may have on the general mental wellbeing. A weak-moderate positive correlation was obtained between GAD-Before and QOL-Before and between GAD-After and QOL-After respectively (Table 3), thus showing that anxiety may also play a part in determining a patient's state of quality of life.

In order to fully assess the outcome of such a residential programme, follow-up of these patients in the community at Health centres or at Outpatient clinics for a few years after completing the programme would be ideal. After completion of the programme, it is important to check whether the participants have maintained the healthy lifestyle which they have been taught during the programme and thus check for a global improvement in mental and physical well-being.

Limitations of this study include the possibility of human error whilst conducting the BDI, GAD and QOL scales as well as human error during data collection and data entry which led to a sample size of 36 individuals out of 163 who had complete data inputted and available for analysis. The small sample size was also another limitation which possibly could have resulted in a Type II error, affecting the power of the study. Another limitation is the loss of follow-up

SUMMARY BOX

- Mental disorders and Obesity are common disorders found in the current society.
- Such conditions may precipitate one another and are often found present together.
- 'Dar Kenn Ghal Sahhtek' offers residential and semi-residential programs for individuals suffering from eating disorders.
- This study was carried out on 163 individuals who enrolled for a weight loss residential program in order to analyse different parameters before and after completion of program.
- A significant decrease was recorded for all parameters after completion of the program.
- A positive correlation was noted between different parameters thus confirming the simultaneous causality between obesity and mental disorders.

and further data collection after the programme was finished, in order to confirm whether this programme was truly efficient and whether the weight loss achieved was maintained in the long term. The lack of a control group whilst conducting the study may also influence the evaluation of the true outcome of this residential programme, but this would have led to individuals in the control group not having been offered the same treatment and interventions.

Prospective interventions at tackling the increasing incidence in high BMIs and co-existing mood disorders would include highlighting the importance of maintaining a healthy lifestyle to obese patients and how this may decrease their odds of developing lifetime mood disorders. Other possible strategies at tackling this issue include launching national public health campaigns to educate and inform the general public as well as educating children from a young age about nutrition and physical activity and encouraging a family-based approach to decrease and prevent obesity.[14] Such measures have already been implemented in the past few years here in Malta but more awareness and education are needed as Malta still has a higher percentage of obese people when compared to other countries.

ABBREVIATIONS

BMI	Body Mass Index
PTSD	Post Traumatic Stress Disorder
EDQOL	Eating Disorders Quality of Life scale
QOL	Quality of Life
GAD-7	Generalised Anxiety Disorder 7-item scale
BDI	Beck's Depression Inventory scale

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REFERENCES

1. Carey M, Small H, Yoong SL, et al Prevalence of comorbid depression and obesity in general practice: a cross-sectional survey. British Journal of General Practice. 2014;64(620):122-7.
2. Zhao G, Ford ES, Dhingra S, et al Depression and anxiety among US adults: associations with body mass index. International Journal of Obesity. 2009;:(33) 257-66.
3. Ng M, Fleming T, Robinson M, et al Global regional, and national prevalence of overweight and obesity in children and adults during 1980-2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet. 2014;384(9945): 766–81.
4. Currie C, Gabhainn NS, Godeau S, et al Inequalities in young people's health. HBSC international report from the 2005/2006 survey. 2008. Copenhagen: World Health Organization.
5. National Statistics Office. (2020, November). Anti-Obesity Day: November 2020 . Retrieved from National Statistics Office Malta: https://nso.gov.mt/Home/Visualisation/Pages/Infographics/International%20day%E2%80%8B/Anti%20Obesity%20Day.aspx
6. Reeves GM, Postolache TT, Snitker S Childhood Obesity and Depression: Connection between these Growing Problems in Growing Children. International Journal of Child Health and Human Development. 2008; 1:(2) 103–14.

7. Petry NM, Barry D, Pietrzak RH, & Wagner JA Overweight and obesity are associated with psychiatric disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. Psychosomatic Medicine. 2008;70:(3) 288-97.
8. NIH/NHLBI Clinical Guidelines on the Identification Evaluation and Treatment of Overweight and Obesity in Adults. 1998; NIH Publication.
9. Björntorp P Do stress reactions cause abdominal obesity and comorbidities? Obesity Reviews 2 2001; 2:73-86.
10. Weber-Hamann B, Werner M, Hentschel F, et al Metabolic changes in elderly patients with major depression: evidence for increased accumulation of visceral fat at follow-up. Psychoneuroendocrinology. 2006; 31:(3) 347-54.
11. Laimer M, Kramer-Reinstadler K, Rauchenzauner M, et al Effect of mirtazapine treatment on body composition and metabolism. The Journal of Clinical Psychiatry. 2006;67:(3) 421-4.
12. Falzon Aquilina F, Grech A, Zerafa D, Agius M, & Voon V 'Dar Kenn Ghal Sahhtek'--an eating disorder and obesity service in Malta. Psychiatria Danubina. 2015; 27:(1) 526-9.
13. Grech A, Spiteri Zerafa D, & Mchedlishvili K A Prospective Study of Short-term Outcomes of a Residential Programme for the Morbidly Obese in Malta. Psychiatria Danubina. 2017; 29:(3) 559-61.