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Resource implications of a brief psychology triage tool for patients pre bariatric surgery: An audit of patient pathways

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Abstract

Purpose: Due to resource limitations, psychological support for bariatric patients needs to be targeted to those most in need. This study aimed to evaluate the resource implications of a brief triage tool to identify and support those most at risk from poorer outcomes.

Materials and methods: A four stage process was used involving: Expert consensus; the selection of appropriate measures; A patient cohort over two years; A resource analysis.

Results: Three key psychological contra-indications for bariatric surgery were identified by expert psychologists (n=45) as alcohol and drug dependency and suicidality. Next, existing validated measures were selected based upon the literature to form the Bariatric Triage Tool (BTT) consisting of the AUDIT, DAST-10 and SBQ-R. Consecutive patients at one UK bariatric clinic then completed the BTT for 2 years (n=484). Of these under a fifth were identified as at risk (n=85; 17.6%) and referred for an in depth one to one assessment with a bariatric psychologist. Of these 7 (1.4%) were referred to their GP for further psychological support and removed from the surgical pathway. Finally, resource implications were evaluated and indicated that the BTT saved both money (between £15 and £105 per patient depending on the metric) and time (just under one hour per patient) which could be used to target those patients most in need of psychological support.

Conclusion: The BTT is a brief, easy to self-administer tool that could be used to identify those most at risk and ensure that psychological support is targeted to those most in need.

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Introduction

Obesity is a clear risk factor for diseases including type 2 diabetes, Coronary Heart Disease and numerous cancers [1] as well as psychosocial outcomes including depression, anxiety and poor quality of life [2,3]. Weight Loss Surgery (WLS) is currently the most successful treatment of obesity for those with a Body Mass Index (BMI) over 40 (or 35 with co morbidities) with the majority of patients achieving clinically significant weight loss far exceeding that lost through lifestyle interventions alone [4] and the reversal of diabetic status [5,6]. Research indicates that psychological factors are an integral part of the bariatric process. For example, many patients show positive psychological outcomes after surgery such as improved self-identified health status, increased self-esteem, a decrease in the preoccupation with food and a decrease in depressive symptoms [7-10]. In contrast, research also indicates that a small minority of patients may show poorer psychological outcomes post- surgery such as binge eating and difficulties with the transfer of addiction particularly to alcohol [11-14]. Further, these patients may also show suboptimal weight loss or weight regain [14-16]. Some studies also suggest that baseline psychological issues including diet, binge eating, depression and anxiety may relate to outcomes following surgery [17-20] although this evidence is mixed [19-21]. In line with this, several research teams [22-24] have argued that bariatric patients require psychological input pre and post-surgery. Further, both National Institute for Health and Care Excellence (NICE) guidelines [25] and those by American Association of Clinical Endocrinologists (AACE) / American Association of Metabolic and Bariatric Surgery (ASMBS) / The Obesity Society (TOS) [26] state that weight loss surgery should only be undertaken by a multidisciplinary team that can provide psychological support. To date, however, psychological support is often under-funded, particularly within the NHS in the UK, resulting in much variability between different services as psychological input remains a limited resource.

Poor outcomes post surgery in the minority, together with limited availability of psychological support, highlights the potential use of a triage system to identify those most likely to benefit from surgery and to target psychological input to those most in need. From a medical perspective, a triage system uses pre surgical assessments to identify those most at risk of complications from the surgery itself and patients are triaged according to their level of risk pre surgery: High risk patients with contra indications such as cardiac, endocrinological or respiratory problems are referred for medical input until these problems have resolved; Medium risk patients have co morbidities which are monitored and managed throughout the surgical process; Low risk patients are those with no or low co morbidities. A similar triage system could be used from a more psychological perspective. In line with this, some research has explored whether psychological factors could likewise be contra-indications for surgery. For example, Fabricatore and colleagues [27] surveyed 194 mental health professionals involved in assessing candidates for bariatric surgery and identified eating disorders, substance use, suicidality and depressive disorders as key risk factors. More recently, guidelines for ASMBS [21] evaluated the existing literature and suggested that the clearest evidence to support psychological contra indications for surgery was for suicidality, drug and alcohol addiction. However, they also highlighted that eating disorder symptoms including binge eating, night eating syndrome, compensatory behaviours and Anorexia Nervosa together with depression and anxiety may influence outcomes post surgery. The authors also conclude, however, that 'in, and of themselves, such symptoms do not necessarily represent an absolute contra-indication for WLS' (21, p.733). Furthermore, these guidelines illustrate how mixed and conflicted much of the evidence in this area is [19-21].

Therefore, although some patients are triaged out of the surgery pathway due to medical contra indications, there remains no consensus as to what psychological factors (if any) should also be contra indications. Such triage could be used to protect high risk patients from poor outcomes post surgery. Given the funding limitations within the NHS in the UK, such triage could also ensure that psychological support can be targeted to those most in need. The present study therefore aimed to identify what psychological factors should be the focus of a triage tool pre surgery; to select validated measures to assess these factors; To evaluate the potential exclusion rate using the tool; To assess resource implications of this tool in terms of cost and time.

Method and results

Evaluating the resource implications of a triage tool involved the following 4 stages**.**

Stage 1: Identifying the focus of the triage tool

An expert consensus approach was used to identify the focus of the triage tool. An online survey was sent to the network of psychologists working in Bariatric Surgery across the UK (n=65) asking to them to rate a series of eight potential psychological contra indications for patients pre surgery (OCD; depression; low levels of weight loss; risk of weight gain; self -harm; suicide attempts; addiction to alcohol; addiction to drugs) using a 5 point Likert scale ranging from 'Not at all' (1) to 'Very much so' (5) and the statement '*To what extent do you think that the following should prevent someone from having bariatric surgery until these factors have been satisfactorily managed?*'. Completed responses were obtained from 45 clinicians (69% response rate). Data were recoded to assess level of agreement for each contra indication (1-3 'disagree'; 4-5 'agree'). The ranked level of agreement that each contra indication should preclude a patient from having surgery was as follows: Low levels of weight loss (3%); OCD (7%); Depression (10%); Risk of weight regain (10%); Self-harm (37%); Suicide attempts (60%); Addiction to alcohol (77%); Addiction to drugs (80%). On the basis of these results the majority consensus indicated that key issues for triage pre surgery were: i) suicidality ii) addiction to alcohol iii) addiction to drugs. These three issues formed the basis of the triage tool.

Stage 2: Selecting validated measures

On the basis of existing literature and current use across primary and secondary care services in the UK three validated measures were chosen for inclusion in the Bariatric Triage Tool (BTT) to assess psychological contra indications for WLS. Patients were asked to consider their answers in the context of the PAST YEAR and estimates indicate that the three measures took approximately 10-15 minutes to self-complete:

i) Suicidality: The Suicide Behaviours Questionnaire Revised (SBQ-R; [28]) is a four-item questionnaire used to assess dimensions of suicidality and assesses suicide risk. In an adult non-psychiatric sample a score greater than or equal to 7 indicates cause for concern. ≥ 7 was used as the cut off for this study. Scores range from 3-18. The SBQ items are consistent with the O'Carroll et al. [29] definition of suicide ideation. The internal

consistency, test-retest reliability and concurrent validity of this measure has been established [30].

ii) **Alcohol dependency:** The Alcohol Use Disorders Identification Test (AUDIT; [31,32]) is a 10-item questionnaire used to screen for alcohol misuse and addiction. Scores of 8 or above indicate harmful levels of drinking while scores of 13 or more indicate likely alcohol dependence. ≥ 8 was used as the cut off in this study. Scores range from 1-40. The AUDIT has been shown to be reliable and valid and to provide an accurate measure of risk across gender, age and cultures [33,34].

iii) **Drug dependency:** The Drug Abuse Screening Test (DAST-10; [35]) is a 10-item questionnaire used to screen for drug abuse. Scores of 1-2 indicate a low level of drug use which should be monitored and re-assessed; Scores of 3-5 indicate a moderate level of drug use warranting further investigation; Scores of 6-8 and 9-10 indicate substantial and severe drug use respectively and warrant intensive assessment. A cut off of **≥**3 was used in this study. Scores range from 1-10. The DAST has been found to be an easy to administer, reliable, and valid tool with good sensitivity and specificity [36].

These measures were prepared as online and paper copies together with basic demographics: age, gender, ethnic group (White / Black / Asian / other). The order of the measures was alcohol dependency, drug dependency, suicidality.

Stage 3: Evaluating the exclusion rate using the triage tool

Design: This part of the process used a cohort design between October 2015 and August 2017.

Sample: All consecutive patients referred for surgery to St Richards Hospital, Chichester, UK self-completed the BTT either online or using a paper copy which was distributed by the medical secretary at the clinic (ie posted the paper copy or sent the online link). The measures were then rated by researchers at the University of Surrey. Scores were then sent back to the MDT at the clinic for consideration. Over this time period all patients (n=484) completed the BTT (74.8% female, 24.8% male, 0.4% unknown), with a mean age of 46 (ranging 18-77 years) who described their ethnicity as White (93%), Black (1%), Asian (0.8%), Other (5%), and incomplete (0.2%).

The triage process: All patients' scores were considered by the MDT at the hospital. Those patients with scores above the cut off on one or more of the three measures were then referred for an in-depth one to one assessment lasting 60 minutes with a bariatric psychologist. During this consultation the psychologist covered: i) the patient's current circumstances (eg. work, family, height, weight); ii) the psychological and physical impact of their weight (eg. relationships, confidence, mobility etc); iii) their relationship to food (eg. overeating, hunger); iv) their Mental Health (eg. any ongoing psychological or psychiatric support; v) surgery preferences (ie types of surgery). All patients also completed the 34 items Clinical Outcomes in Routine Examination, (CORE-OM; [37]). If deemed suitable for surgery by the psychologist, patients continued on the surgical pathway. Where surgery was deemed inappropriate, a letter was sent to the patients' GP informing them of the need for further psychological support before surgery could be completed. The patient was then removed from the surgical pathway until any problems had been resolved.

Data analysis: For the purpose of the present audit, all identifiable patient data was removed from the database, leaving only BTT scores and basic demographic information. The remaining data were analysed to produce a count of patients referred for one to one psychological assessment, with sub-counts for each of the three measures. Bariatric psychologists at the St Richard's Hospital bariatric service provided a count of patients whose surgery was deferred following one to one assessment.

Findings: The mean scores on the three measures were as follows: AUDIT (alcohol; mean=1.95); DAST-10 (drugs; mean=0.15); SBQ-R (suicidality; mean=4.31). The numbers of patients above the cut offs for the three measures were as follows: AUDIT: n=22; (4.5%); DAST-10: n=4 (1.7%); SBQ-R: n=70 (14.5%). Nine patients exceeded the cut-off for both the AUDIT and the SBQ-R, and one patient exceeded the cut-off on all measures. In total, 85/484 (17.6%) patients scored above the recommended cut-off on one or more of the BTT measures and were referred by the MDT for further psychological assessment and a one to one consultation with the bariatric psychologist. Of these, surgery was deemed to be unsuitable for 7(1.4%) patients, and they were moved out of the surgical pathway pending further psychological input. Overall, therefore the BTT identified 85 (17.6%) with possible contra indications for surgery and ultimately 7/484 (1.4%) who should defer having surgery until any problems have been satisfactorily resolved.

Stage 4: Estimation of resource implications

Resources implications in terms of cost and time were calculated using the following metric: **i) one to one assessment with bariatric psychologist**: 60 mins assessment plus 30 mins paperwork, costed both as an ad hoc counselling psychologist (£40 per hour) / a salaried midpoint band 7 (£47,000 pa including on costs) clinical psychologist (£26.70 per hour) / an ad hoc clinical psychologist (£100 per hour); **ii) BTT administration:** by receptionist (5 mins) and coding by researchers (10 mins): total: 15 mins (costed as graduate researcher, 1b.4 scale £12.30 per hour including on costs). The results from this analysis are shown in Table 1.

Based on cost and time spent administering both the one to one assessment and the BTT, in the present study and this cohort of 484 patients the BTT saved between £15 and £105 and just under an hour per patient, accounting for the BTT for all patients and one to one assessments for the minority of patients following referral after BTT assessment.

Conclusion

The present study used a four stage process to explore the resource implications of a psychology triage tool for use with patients pre bariatric surgery. The results indicate that the key psychological contra indications identified by expert psychologists working in the area were alcohol and drug dependency and suicidality and that these could be self-assessed by patients using the Bariatric Triage Tool (BTT) consisting of the AUDIT, DAST-10 and the SBQ-R which show good reliability and validity and are brief and easy to complete. These three areas reflect those considered in the literature to be most supported by existing evidence as possible contra indications for surgery [21]. The results also indicate using this tool identified 85 at risk patients (17.6%) over a two year period who scored above the cut off for at least one measure and required a more in depth one to one assessment. Of these only 7 (1.4%) were ultimately removed from the surgical pathway and referred back to the GP for further psychological support prior to surgery. This reflects the medical triage process and indicates that a classification of

patients into high risk (exclude until psychological issues have been resolved), medium risk (offer additional psychological assessment and support) and low risk (proceed) may be a useful approach. In terms of cost, the analysis indicated that administering the BTT saved resources compared to one to one assessment for all patients in terms of both time and money indicating that this offers a method to target resources to those most in need.

There are some problems with this audit that need to be considered. Primarily, the choice of contra indications came from an expert consensus. This is due to the absence of longitudinal data exploring the impact of pre surgical psychological factors on post-surgery outcomes. They do, however, reflect areas identified in the research to date. Additional measures could be added in the future. Second, scores on these measures are based upon self report which is open to issues of bias and social desirability with patients under reporting problems due to a desire for surgery. This may be minimised by a face to face clinical interview which in turn would have greater resource implications. Third, the study took place in one Bariatric Service in Chichester which may well not be representative of other more urban settings. Finally, the study does not enable the analysis of how those removed from surgery due to their scores on the BTT and / or the assessment from the bariatric psychologist would have responded to surgery had they continued along the pathway. Each of these problems requires a large scale cross clinic trial. Until such data is available however, the results from this audit provide some insights into the feasibility of using a simple self-administered tool in clinic to protect those least likely to benefit from surgery and to target psychological support to those most in need.

To conclude, the three key psychological contradictions for bariatric surgery were alcohol and drug dependency and suicidality which can be self-assessed by patients using BTT. This tool identified under a fifth of patients (n=85; 17.6%) as at risk and following an in depth one to one assessment a small minority (n=7; 1.4%) were removed from the surgical pathway and referred for further psychological support. The BTT was found to be quicker to administer and to cost less than one to one assessments for all patients pre-surgery. This new tool could be used for all patients pre surgery as a means to identify those at risk of poorer outcomes post-surgery. This does not mean that patients pre-surgery should no longer receive a comprehensive preparatory and educational work up to prepare them for surgery and the post-surgery experience by the bariatric team. But it could provide a useful triage process to enable the time and resources of psychological input to be spent on those identified as most in need.

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Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Tables

Table 1: Resource implications: time, costs and savings.

	Resource cost to NHS (£)				Time cost to NHS (mins)	
	One to one assessment			BTT	One to one assessment	BTT
	Ad hoc couns psych	Salaried clinical psych	Ad hoc clinical psych			
Per patient	£60	£41.60	£150	£18.45	90 mins	15 mins
Total for sample (n=484)	£29,040	£20,134	£72,600	£8,930	43,560 mins	7,260 mins
Sample after BTT (n=85)	£4,800	£3,536	£12,750	£1,568	7,650 mins	1,275 mins
Tot cost with BTT	£13,730	£12,466	£21,680		14,910 mins	
Cost per pt with BTT	£28.37	£25.76	£44.79		30.81 mins	
Tot savings with BTT	£15,310	£7,668	£50,920		28,650 mins	
Savings per pt with BTT	£31.63	£15.84	£105.21		59.19 mins	

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