

Volume 1 – Research Component:

THE COMPARISON OF BINGE DRINKING IN YOUNG FEMALES FROM TWO
POPULATIONS: THE ROLE OF MENTAL HEALTH AND RESILIENCE

by

Renata Mello Bryce

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Department of Clinical Psychology

School of Psychology

The University of Birmingham

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OVERVIEW

This thesis is submitted in partial fulfilment of the requirements of the degree of Doctorate of Clinical Psychology at the University of Birmingham, comprising of both the research and clinical components of the course.

Volume One is the research component and incorporates three papers. The first paper is a literature review which explored the contributors of psychological distress amongst bladder cancer patients. A total of 26 articles were in the review. The methodology of the articles was evaluated using the Kmet Quality Criteria for quantitative studies. The review discusses the most common factors that contributed to psychological distress in bladder cancer such as treatment outcome, psychological factors, cancer-related issues, socio-demographic issues. The review finishes with a discussion of the limitations identified and the implications of findings to public health and clinical psychology.

The second paper is an empirical study aimed to compare binge drinking between a university student sample and a community sample, it also aims to explore the role of resilience and how mental health impacts upon hazardous drinking. A quantitative analysis was carried out to test three main hypotheses: 1) students would be more likely to binge drink, 2) resilience and mental health would be correlated (i.e. more resilient participants would have better mental health), and 3) there would be an interaction between resilience and mental health and this would affect the prospect of hazardous drinking. Secondary hypotheses were also tested and the sub-scales of mental health and resilient measures were analysed to assess whether any of their individuals' domains had any impact on hazardous drinking. There were some

significant differences between the samples with regards to age (students were younger), age of onset of drinking (students started drinking at younger age), mental well-being (students had better mental health) and hazardous drinking (community at higher risk for hazardous drinking). Both samples presented similar resilient scores. No interaction between resilience and mental health was found. Mental well-being alone had the strongest effect on hazardous drinking. The paper discusses the implications for public health, clinical psychology and research, and describes strengths and weaknesses.

The third paper is a Public Domain Paper, which encompasses the review and the empirical study written in lay language.

Volume two includes the clinical component and comprises of five Clinical Practice Reports (CPRs), which are examples of clinical work completed through the course of the training. CPR 1 describes the case of a 22-year-old woman presenting with depressive symptoms. The presenting difficulties are formulated using a cognitive behaviour and a psychodynamic approaches. CPR 2 is a single-case experimental design assessing challenging behaviour in a 44-year-old woman with a diagnosis of autistic spectrum disorder and severe learning disability. A behavioural approach was used to formulate and to inform the intervention. CPR 3 was a service evaluation that explored black and minority ethnicities referrals to the Psychology Service in a Severe and Brittle Asthma Unit. A staff evaluation was used to assess if there was any underrepresentation and potential barriers to accessing the service. CPR 4 illustrates the case of a 17-year-old girl presenting with depression. The cognitive behavioural model was used to formulate the presenting difficulties. An

abstract is presented for CPR 5 which was a service evaluation aimed to compare the number of referrals from a black minority population with the general population and to measure differences in diagnosis based on ethnicity. To ensure confidentiality pseudonyms were used throughout.

DEDICATION

For

Adam & Jason

And, as always, for Helena

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I would not have finished this training without the support and encouragement of some key people within the course team. I am most grateful to Dr Hermine Graham, my appraisal tutor and research supervisor, who has been my champion and has been flying my flag in the most difficult of times. I am also very grateful to Dr Ruth Howard who took on the job to supervise my research in such difficult circumstances. Thank you both for your help and support, particularly in the final year of my training.

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VOLUME 1

1. LITERATURE REVIEW:

What are the contributory factors affecting psychological distress in adults with bladder cancer?

Supervised by

Dr Ruth Howard

Paper to be edited and submitted to Psycho-Oncology

ABSTRACT

Objective: To ascertain the main contributors to psychological distress in adults with bladder cancer. **Methods:** The databases Psychinfo, Embase, Medline, and CINAHL were searched in February 2016. All articles in English published after 1985 were included if they 1) included bladder cancer as the only cancer studied or as one of many, 2) and if the main interest was on the predictors of psychological distress (dependent variable), and 3) any study design was included but case studies, however studies needed to be quantitative. **Results:** The search yielded 1367 studies of which 26 met inclusion criteria and were included in the review. Methodological quality was assessed using the Kmet framework for quantitative studies. On average studies included had a good rating. Eight broad categories were found as contributing to the presence of depression and/or anxiety (psychological distress) in bladder cancer patients, namely 1) bladder cancer specific treatments, 2) psychological factors and resource, 3) socio-demographic factors, 4) social support, 5) cancer related factors, 6) functional and cognitive impairment, 7) physical health, and 8) interventions. There was a large degree of heterogeneity with regards to designs, questionnaires used and definitions of psychological distress.

Conclusions: Psychological distress in bladder cancer can be affected by an array of factors of which specific treatment consequences play a significant role due to changes in body image and sexual functioning. More research is warranted to explore how factors identified in this review change over time and their impact on psychological distress trajectories and on engaging with oncological care.

BACKGROUND

Cancer is one of the leading causes of mortality and years of healthy life lost in the world. In 2012 an estimated 14.1 million new cases of cancer were diagnosed worldwide and an estimated 8.2 million people died of cancer in that year. Trachea, bronchus and lung cancers were the fifth leading cause of death worldwide in the year 2012 according to the World Health Organisation (WHO), 1.6 millions deaths (2.9%), an increase from 1.2 million in 2000 (WHO, 2014b). By 2030, the global burden of cancer is expected to grow to 21.4 million new cancer cases and 13.2 million cancer deaths simply due to the growth and aging of the population, as well as reductions in childhood mortality and deaths from infectious diseases in developing countries (Ferlay et al., 2013). However, this projection can be an underestimation if the rest of the world adopts similar lifestyle choices to those living in developed countries. Research shows that there is a strong link between lifestyle choices and cancer (Key et al., 2004; McCullough et al., 2011). Currently, information published by Cancer Research UK suggests that 4 in 10 cancers could be prevented by lifestyle changes such as not smoking, adopting a balanced diet, not being overweight, reducing alcohol use and exercising (Cancer Research UK, 2010).

In the United Kingdom (UK) there are now 2.5 million people living with cancer, rising to 4 million by 2030 (Macmillan Cancer Support, 2015). Cancer incidence estimates for the UK predict that by the end of 2016 nearly 361,000 people will be diagnosed with cancer, that is 1,000 new cases diagnosed every day (Macmillan Cancer Support, 2015). Furthermore, around 160,000 people in the UK will die of cancer every year (Office for National Statistics, 2015a), with lung cancer being the second

leading cause of death in 2013 for men and the fourth for women (Office for National Statistics, 2015b).

Bladder cancer is the ninth most common cancer in the UK (Office for National Statistics, 2016) accounting for 3% of all new cases; in the United States (US) bladder cancer is the seventh most prevalent (CDC, 2013). In males in the UK, it is the fourth most common cancer (4% of all male cases), whilst it is the 14th most common cancer in females (2% of female cases) (Cancer Research UK, 2014a).

Cancer is a disease of old age. Half of all cancer cases diagnosed in the UK each year occur amongst those aged 70 years and over with incidence rates increasing with age in most cancer types (Cancer Research UK, 2014b). This trend is directly related to the fact that people are living longer. Furthermore, better treatments and changes in lifestyle are likely to contribute to the increased survival rates thus pressurising health systems which will need to cope with larger numbers of cancer survivors. Half of the population with cancer in England will survive the disease for ten years or more (Cancer Research UK, 2011). Bladder cancer is strongly associated with age, with incidence rates rising gradually amongst men and women aged 50-54, a sharper rise in men aged 60-64, and peaking in men and women aged >90, making this cancer type rare in children (Cancer Research UK, 2016) (Appendix 1).

Cancer is a life changing condition and for many people receiving a diagnosis of cancer it is a traumatic event that may impact different aspects of their lives (Gregurek, Bras, Dordević, Ratković, & Brajković, 2010; Mehnert et al., 2014; Pranjić,

Bajraktarevic, & Ramic, 2016). The need to better understand this change and its impact has driven health professionals and academics to study quality of life (QoL) and psychological distress in cancer patients and their families (Gregurek et al., 2010; Haun, Sklenarova, Brechtel, & Herzog, 2014; Mehnert et al., 2014)

Quality-of-life (QoL) is a complex construct linked to different areas of life. The WHO sees this concept as an “individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is affected by the person’s physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment” (WHO, 1997, p.1).

Therefore, QoL measures adopt a multidimensional approach and usually cover the following core components: physical, functional, psychological/emotional and social/occupational (Fallowfield, 2009).

The National Comprehensive Cancer Network (NCCN) defines distress associated with cancer as an ‘unpleasant emotional experience of a psychological (cognitive, behavioural, emotional), social, and/or spiritual nature that may interfere with the ability to cope effectively with cancer, its physical symptoms and its treatment.

Distress extends along a continuum, ranging from common normal feelings of vulnerability, sadness, and fears to problems that can become disabling, such as depression, anxiety, panic, social isolation, and existential and spiritual crisis’ (NCCN, 2014, p.2). The National Institute for Health and Clinical Excellence (NICE) also includes within this concept psychological problems such as depression, anxiety, problems with personal relationships, psychosexual difficulties, alcohol and drug-

related problems, personality disorders, and deliberate self-harm (NICE, 2004). Due to the high prevalence of these problems in patients newly diagnosed with cancer and/or those who have survived the cancer, NICE also recommends routine screening of psychological distress and the provision of the necessary psychological interventions (NICE, 2004).

Factors such as high disease burden, insecure attachment, low self-esteem, and younger age can be seen as risk factors for the development of depression in cancer patients (Rodin et al., 2009). Other studies have suggested that being female, having an active cancer, and receiving treatment (palliative or active) place people at higher risk for developing psychological problems (Cassileth et al., 1986; National Cancer Institute, 2002; Strong et al., 2007). Whereas others have suggested that older age, pain and low levels of education can predict depression in cancer patients (Hong & Tian, 2014; Strong et al., 2007). In addition, psychological distress has been significantly linked with an increased risk of mortality in cancer patients (Russ et al., 2012).

While there has been a lot of research focusing on the top six most common cancers (breast, prostate, lung, bowel, malignant melanoma, non-Hodgkin lymphoma) the same is not true for the bottom four (kidney, brain, bladder and pancreas). This review focuses on the ninth most common cancer in the UK and the fourth most prevalent in men, bladder cancer.

Aims

To the author's knowledge, this is the first review aimed to assess what factors contribute the most to psychological distress in adults with bladder cancer. Therefore, this review adds to our understanding of the bladder cancer literature as a whole, and specifically the psychosocial evidence-base.

METHODS

Search History

The databases Psychinfo, Embase, Medline, and CINAHL were searched in February 2016. All articles published after 1985 were included. The decision of limiting the search to articles published after 1985 was twofold: firstly, internal evidence provided by former academic supervisor and secondly, due to the unlikelihood of many articles published before that year. Psychological distress by definition is “integrally related to QoL” (Palapattu et al., 2004, p. 1814) and not many QoL articles focusing on bladder cancer were published before the early 1990s (Gerharz, Mansson, & Mansson, 2005), thus it was assumed that this search would not miss relevant studies.

Table 1 shows the search terms used with Boolean operators and key words, with the use of truncation and the ‘adjacent’ features.

Set	Search Terms	Adjacent or Key Words
1	bladder* or urinary*	adj4 neoplasm* or tumor* or tumour* or cancer* or carcinoma*
2	distress* or depress*	N/A
3	urinary bladder neoplasms	Key words
4	affective symptoms or depression or stress, psychological	N/A
5	fear* or anxi*	adj4 recurr*
6	psychosocial	Key word
7	1 or 3	N/A

8	2 or 4 or 5 or 6	N/A
9	7 and 8	N/A
10	limit 9 to english language	N/A
11	10 and 1985:2016	N/A

Table 1. Search strategies and search terms used in the review

Inclusion and Exclusion Criteria

The following inclusion and exclusion criteria were adopted in this search:

Inclusion Criteria:

1. Studies focusing on bladder cancer (muscle-invasive type) both as the only cancer type under investigation or as one of many
2. Studies including participants from 18 years of age and over
3. Studies that had psychological distress as a dependent variable (main outcome)
4. Psychological distress defined as psychological well-being, anxiety, depression, hopelessness or acute stress
5. English language articles
6. Any study with a quantitative design, excluding case studies

Exclusion Criteria:

1. Reviews, conference abstracts and dissertations were not included
2. Qualitative studies were excluded
3. Studies that were not measuring predictors of psychological distress were excluded

4. Studies only measuring quality of life
5. Studies focusing on patients under cancer investigation without a confirmed diagnosis were excluded
6. In cases where the search yielded studies using the same sample (multiple publications) only studies that met the criteria above were included

Procedure

The search resulted in 1039 articles and after excluding duplicate papers using the 'deduplicate' function in Ovid Medline this resulted in 831 articles. The CINAHL search yielded 328 articles. These were screened by title, abstract and then full-text in accordance with the inclusion and exclusion criteria. Eligible articles were exported to Mendeley Desktop (Elsevier, 2016). In the case where a definitive answer to the inclusion of the study could not be ascertained, then the article was reviewed in full-text. For articles which did not have an abstract but the title suggested eligibility, the article was also reviewed in full text. A hand search of the references from the eligible articles was conducted to identify any further additional articles. Figure 1 highlights the process of identification of studies. Forty-eight articles were then reviewed in full text. A further twenty-four articles were excluded. Reasons for exclusions are described in Figure 1.

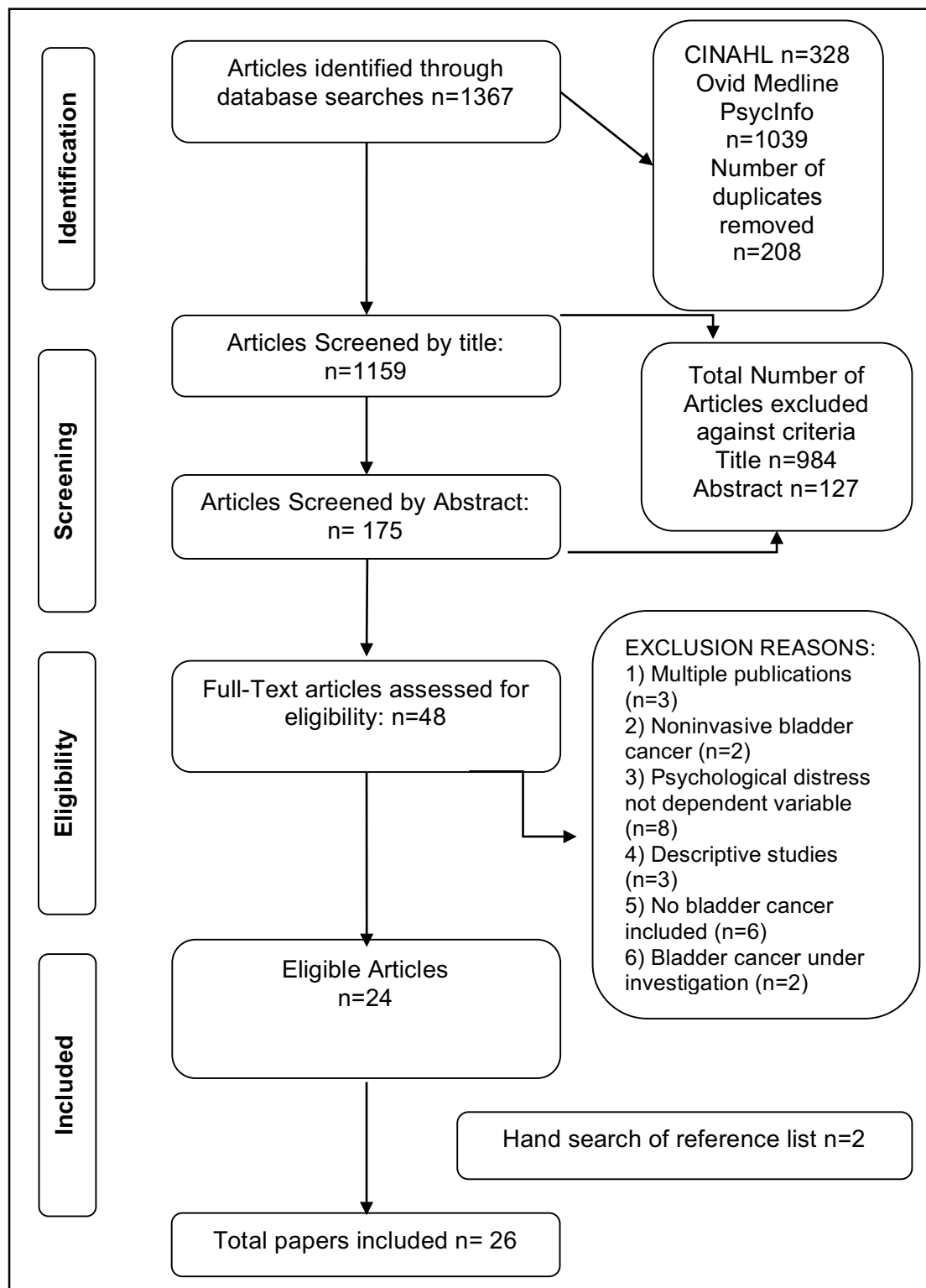


Figure 1. PRISMA Flowchart of Literature Search Procedure

Quality Assessment

An unsystematic search was carried out prior to the review highlighting the small numbers of papers looking specifically at the predictors of psychological distress in bladder cancer, therefore it was important to adopt a broad inclusion criterion hence it was decided to include studies with different designs and across a range of age groups. Therefore, to assess the quality of the primary research articles a quality framework that encompassed all designs was adopted.

The Kmet Quality Framework (Kmet, Lee, & Cook, 2004) was used to measure the methodological quality of all studies included. This framework includes 14 items (Table 1) that were scored depending on the degree to which the specific criteria were met (“yes” = 2, “partial” = 1, “no” = 0). A summary score was calculated for each paper by summing the total score obtained across relevant items and dividing by the total possible score (i.e.: $28 - (\text{number of “n/a”} \times 2)$) (Kmet et al., 2004). Items not applicable to a particular study design were marked “n/a” and were excluded from the calculation of the summary score. Total scores were later converted to a percentage score of the total possible sum. A percentage score of over 80% was considered strong quality, a score of 60-79% was considered good quality, a score of 50-59% adequate quality and a score <50% was considered to have poor methodological quality (Ghannouchi, Speyer, Doma, Cordier, & Verin, 2016).

All studies had their quality rated by the author. In addition, a random sample of the studies included in the review ($n= 5$) had their methodological quality independently rated by a second rater (the academic supervisor). A two-way mixed intra-class correlation coefficient (ICC) was calculated to test the reliability of the quality

framework rates between these two raters. The ICC was used due to the continuous nature of the variable (i.e., quality values ranged from 0 to 100). An ICC equals 1 indicates perfect reliability, whereas 0 indicates no reliability, with values above .7 categorised as acceptable, values above .8 categorised as good, and values over .9 categorised as excellent reliability (McGraw & Wong, 1996; Weir, 2005). Cronbach's alpha for the inter-rater reliability analysis was 0.78.

RESULTS

Study Demographic Characteristics

Table 2 shows the 26 studies included in this review and its main demographic characteristics. Most of the studies were carried out in high income countries (USA, Australia, UK, Sweden, Italy, The Netherlands, Japan, Germany, France, Denmark), with two from Egypt¹ (Ahmed, Kamal, & Zahar, 2004; Ali & Khalil, 1989) and two from China² (Ho, Chan, & Ho, 2004; Yang, Liu, Li, Shi, & Wang, 2016). Papers included in the review were published between 1987 and 2016. The total number of participants included was 14576 of whom 2463 had a diagnosis of bladder cancer (this number excludes Ficarra et al., 2000 who reported population proportions in percentages). Most studies provided detailed information on demographic variables, and of these the majority of the sample studied was male (n=6960) and with an age range of 18 to 86 years.

¹ Egypt is categorised as a lower middle income country according to the World Bank Classification

² China is categorised as upper middle income according to the World Bank Classification (The World Bank, 2016)

Table 2. Studies demographics characteristics

Study	Year	Country	Total participants	Total bladder cancer patients only	Total controls	Age range (mean) ³ (18-87)	Gender ⁴
1. Ahmed et al.	2004	Egypt	148	148	124	48.6	82% males 18% females
2. Mansoon et al.	2000	Sweden/Italy	66	66	n/a	43-74	Male only
3. Mansson et al.	1998	Sweden	57	57	n/a	34-81 (62)	44 male 13 female
4. White et al.	2014	USA	9.282	710	289.744	≥ 65	4722 male 4560 female
5. Arora et al.	2009	USA	623	161	n/a	62.6 (SD=12.9)	56.7% males 43.3% females
6. Biegler et al.	2012	USA	115	1	n/a	58.3 (19-84, SD = 11.3)	Male only
7. Braeken et al.	2013	Netherlands	268	50 (+ prostate)	300	≥ 18	183 female 85 male
8. Butow et al.	2013	Australia	596	42 (+ kidney)	n/a	≥ 18	306 female 290 male
9. Canoui-Poitaine et al.	2016	France	1.092	153 (+ kidney &	n/a	80.4 (SD=5.7)	533 female 559 male

³ Information provided for participants (intervention) group only. Age in years.

⁴ Information provided for participants (intervention) group only

10. Hardt et al.	2004	Germany	81 ⁵	urinary) 81	n/a	44-82 (63)	20 female 61 male
11. Jacobsen et al.	2013	USA	286 ⁶	28	n/a	≥ 18	% divided in 4 groups. Majority of males across all groups
12. Henningsohn et al.	2003	Sweden	306	306	310	40-85 (71)	Mean age by gender but not actual numbers of male/females
13. Ando et al.	2009	Japan	28	2	n/a	60 (SD=9.2)	4 male 24 female
14. Gonzalez et al.	2014	USA	102	2	n/a	59.1 (SD=9.99)	93 female 9 male
15. Palapattu et al.	2004	USA	62 ⁷	62	n/a	34-84 (64)	62 male 12 female
16. Pedersen & Zachariae	2010	Denmark	112	17	n/a	Male = 62.4 Female = 58.7	52 male 60 female
17. Ho et al.	2004	China	139	1	n/a	49 (28-69, SD = 8.41)	Female only
18. Rabow et al.	2015	USA	30	52	22	46-82 (67)	23 male 7 female

⁵ Total number of participants at 1 year follow up

⁶ Total number of participants who completed all three assessments (3 different time points)

⁷ Total number of participants who completed postoperative assessment

19. Yoneda et al.	2003	Japan	37	67	n/a	29-84 (67)	33 male 4 female
20. Ficarra et al.	2000	Italy	155	54	n/a	31-78 (63)	22 female 133 male
21. Yang et al.	2016	China	489	244	n/a	59.1 (SD=11.28)	345 male 144 female
22. Philip et al.	2009	UK	52	52	n/a	By type of diversion: OBS: 60-79 (65) ICD: 32-85 (73)	12 female 40 male
23. Gerharz et al.	1997	Germany	192	192	n/a	By type of diversion: CR: 21-86 (64) IC: 31-87 (65)	137 male 55 female
24. Weijerman et al.	1998	Netherlands	56	56	n/a	18-71 (45) male=45.6 female=43.6	31 male 25 female
25. Boyd et al.	1987	USA	172	172	n/a	28-75 (59)	126 male 46 female
26. Ali & Khalil	1989	Egypt	30	30	15 (out of 30)	Exp. <i>M</i> age 45.33 (SD=5.9) Control <i>M</i> age 45.86 (SD=4.4)	23 male 7 female

Of the 26 studies included in this review, 13 included bladder cancer patients only (Ahmed et al., 2004; Ali & Khalil, 1989; Boyd et al., 1987; Gerharz et al., 1997; Hardt, Petrak, Filipas, & Egle, 2004; Henningsohn, Wijkstrom, Pedersen, et al., 2003; Mansson et al., 2000; Mansson, Christensson, Johnson, & Colleen, 1998; Palapattu, Haisfield-Wolfe, et al., 2004; Philip, Manikandan, Venugopal, Desouza, & Javlé, 2009; Rabow, Benner, Shepard, & Meng, 2015; Weijerman et al., 1998; Yoneda, Igawa, Shiina, Shigeno, & Urakami, 2003) and 13 included different types of cancer of which bladder was one of the sites studied (Ando et al., 2009; Arora, Weaver, Clayman, Oakley-Girvan, & Potosky, 2009; Biegler et al., 2012; Braeken et al., 2013; Butow et al., 2013; Canoui-Poitaine et al., 2016; Ficarra et al., 2000; Gonzalez et al., 2014; Ho et al., 2004; Jacobsen et al., 2013; A. F. Pedersen & Zachariae, 2010; White, Reeve, Chen, Stover, & Irwin, 2014; Yang et al., 2016). Of the 13 studies that included different cancer sites, 10 presented pooled results, two presented results pooled and stratified by cancer type and one presented only stratified results.

Study Methodological Characteristics

Table 3 shows the data extraction with quality ratings. There was a large variation in study designs across articles included in this review, the most used design was cross-sectional (n=11) (Arora et al., 2009; Biegler et al., 2012; Butow et al., 2013; Canoui-Poitaine et al., 2016; Ficarra et al., 2000; Gerharz et al., 1997; Gonzalez et al., 2014; Ho et al., 2004; Pedersen & Zachariae, 2010; White et al., 2014; Yang et al., 2016), followed by pre- and post-treatment studies (n=6) (Ali & Khalil, 1989; Ando et al., 2009; Hardt et al., 2004; Henningsohn, Wijkstrom, Pedersen, et al., 2003; Palapattu, Haisfield-Wolfe, et al., 2004; Weijerman et al., 1998), and between-group studies (n=4) (Boyd et al., 1987; Mansson et al., 2000; Philip et al., 2009;

Yoneda et al., 2003). Two studies were randomised control trials (Braeken et al., 2013; Jacobsen et al., 2013), only one adopted a prospective design and followed up patients for 6 months (Rabow et al., 2015), one was a repeated measures with 4 time points: preoperative, 3 months, 12 months and 5 years (Mansson et al., 1998), and one was a case-control study (Ahmed et al., 2004).

Twenty-five studies included were questionnaire-based studies and only one used a clinical interview (Canoui-Poitaine et al., 2016). However, amongst the questionnaire-based studies, two used either a clinical instrument not previously used in research in addition to visual analogue scales (Mansson et al., 1998), and/or not validated measures and semi-structure interviews (Henningsohn, Wijkstrom, Pedersen, et al., 2003), one study used a measure validated specifically to be used in the study (Gerharz et al., 1997), one study used a mixture of validated and not validated measures (Mansson et al., 2000), and one study also included a qualitative section with five open-ended questions (Ali & Khalil, 1989). In addition to the single case control study (Ahmed et al., 2004), two studies that compared changes in pre- and post-treatment also used a control group (Ali & Khalil, 1989; Henningsohn et al., 2003) with one of these testing a psychoeducation programme before surgery using a randomisation technique (Ali & Khalil, 1989). Finally, two studies of the 11 with a cross-sectional design also adopted comparison/control groups (Butow et al., 2013; Ficarra et al., 2000).

Twenty-four out of 26 studies included both men and women in their sample, the exceptions were Mansson et al., (2000) and Biegler et al., (2012) that recruited only men and Ho et al., (2004) that included only women.

Table 3. Data Extraction of 26 Papers[§]

Author, year, journal & country	Population & Study Type	Types of cancer	Aims (relevant to this review)	Psychological distress Outcome Measures	Pooled or stratified results	Key points (relevant to this review)	Quality (KMET)
1. Ahmed et al., 2004 (Journal of the Bahrain Medical Society; Egypt)	148 patients 124 controls Case control retrospective design	Bladder	1. To study psychological variables such as depression, personality traits, anxiety and life events and its correlates in patients with bladder cancer	1. Depression: Zung self-rating scale for depression diagnosis 2. Life events: Holmes and Rahe questionnaire 3. Trait Anxiety: Zahar and Spielberger questionnaire 4. Personality traits: Eysenk Personality Inventory	Bladder cancer data only	1. Depression was more prevalent in patients 2. Trait anxiety was the only significant independent variable associated with depression 3. Patients presented with higher scores in trait anxiety 4. More controls were categorised with neuroticism personality trait and had more life events	12/22 54%
2. Mansson et al., 2000 (BJU ⁸ International; Italy & Sweden)	33 men in Padua, Italy and 33 men in Lund, Sweden treated for BC ⁹ with cystectomy and	Bladder	1. To test whether QoL ¹⁰ measures, including mood and emotions, differ between two culturally different	1. 33-items questions on postoperative psychosocial, sexual adjustment, mood and emotions – not formally validated 2. Visual Analogue Scale	Bladder cancer data only	1. Gradual improvement after the operation but emotional problems and fear of recurrence remained;	12/22 54%

⁸ British Journal of Urology

⁹ Bladder Cancer

¹⁰ Quality of life

	urinary tract reconstruction (orthotopic)		populations;	(VAS) to score responses from the 33-items questionnaire 3. 26-items questionnaires dealing with 'general view of life' – not formally validated 3. QoL questionnaire: EORTC-QLQ-C30		2. Although mood and self-esteem changed after operation no statistical difference between groups was found; 3. Orthotopic bladder reconstruction and its post-operation symptoms did influence psychosocial variables	
	Between-group comparison						
3. Mansson et al., 1998 (BJU; Sweden)	57 (baseline) men and women treated for BC with cystectomy 32 (follow up) Pre- and post-study with repeated measures at 3, 12, 60 months	Bladder	1. To assess relationship between preoperative defensive strategies and mood; 2. to assess psychological adaptation after radical treatment for BC	1. Meta-contrast technique (MCT) – to assess defensive strategies for coping 2. Anxiety and depression measured by 5 yes or no questions each 3. Visual analogue scale (VAS) to measure experiences in the 1 st month after surgery (0=no difficulty, 10=great difficulty) – not validated	Bladder cancer data only	1. Patients with impaired self-esteem and persistent feeling of mental change often score very high on the VAS (1 st month) 2. High VAS scores at 3m associated with fear of recurrence, helplessness, feelings of social isolation, mood change 3. Emotional problems in managing the stoma/urine at 3, 12 and 60m - no difference	16/22 73%

between types of reconstruction
4. Reduced self-esteem high in orthotopic and did not improve after 5y.

4. White et al., 2014 (Cancer Surviv; USA ¹¹)	Population-based cancer registries (SEER-MHOS ¹²) – n = 289.744 (non-cancer) + n = 9.282 (cancer)	Bladder Breast Colorectal Endometrial/uterine Lung Prostate No cancer	1. To evaluate the prevalence of MDD ¹³ among older Americans with and without cancer; 2. To determine factors associated with MDD, e.g. cancer type, demographics, comorbidities, and urinary incontinence symptoms (UI) 3. To investigate the combined impact of UI and MDD and HRQOL ¹⁴	1. MDD defined by using an algorithm that used 3 questions from the Diagnostic Interview Schedule (DIS) + 1 (Rost et al., 1993) 2. HRQOL – SF ¹⁵ -36 + VR ¹⁶ -12	Pooled and Stratified	1. Bladder cancer was associated with MDD (p=0.05) 2. Being older (≥85), female, and having difficulties completing activities were associated with BC 3. The co-occurrence of MDD and UI had a large negative impact on role emotional and SF scores	21/22 95%
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¹¹ United States of America

¹² Surveillance, Epidemiology and End Results (SEER) and the Medicare Health Outcome Survey (MHOS)

¹³ Major depressive disorder

¹⁴ Health related quality of life

¹⁵ Short-form 36 version 1

¹⁶ Veterans Rand 12

5. Arora et al., 2009 (Patient Education and Counselling; USA)	774 survivors completed the survey 395 asked questions re physical style Survey data analysis of a population-based study	Bladder Colorectal Leukemia	1. To identify correlates of physicians' decision-making style; 2. To evaluate the association between physician decision-making style and the physical and mental components of HRQOL;	1. HRQOL – mental and physical component of the Short Form-36 (SF-36) 2. Physicians' Decision-making Style Scale (PDEMS) – 5 items (yes definitely or somewhat, no) answered by cancers' survivors (0-100 metric)	Pooled	4. Cancer severity was not associated with MDD risk 1. Physician decision-making style not associated with physical health 2. Age & comorbidities were associated with MCS ¹⁷ 3. A more participatory physician style maybe associated with better mental health by a) increasing survivor's participation self-efficacy and thereby enhancing control, and by b) enhancing survivor's level of trust and thereby reducing uncertainty	22/22 100%
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¹⁷ Mental Component Summary

6. Biegler et al., 2012 (Integrative Cancer Therapies; USA)	Men scheduled for surgery for genitourinary cancer (n=115) Cross-sectional	Prostate Renal Bladder	1. To explore the associations between R/S ¹⁸ and distress during early post-diagnosis and pre-surgical period.	1. R/S: 10-item measuring intrinsic religiosity + 2-item organised religious activity and 3-item non-organised religious activity 2. Brief-COPE ¹⁹ 3. Social support: MOS-SSS ²⁰ 4. Distress: PSS, IES, BSI-18, POMS ²¹	Pooled	1. R/S was +ve associated with engagement coping 2. R/S was not associated with avoidant coping, social support or distress 3. Social support was inversely associated with distress but was +ve associated with engagement coping 4. Engagement coping was +ve associated with distress 5. Avoidant coping was +ve associated with all measures of distress 6. R/S buffers the association between engagement coping and distress prior to surgery	15/22 68%
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¹⁸ Religion and Spirituality

¹⁹ Brief Coping Operations Preference Enquiry

²⁰ Medical Outcomes Study Social Support Survey

²¹ Perceived Stress Scale, Impact of Event Scale, Brief Symptom Inventory-18, Profile of Mood States

7. Braeken et al., 2013 (Psycho-Oncology; Netherlands)	Patients receiving RT and all radiotherapists working at BVI ²² (experimental group n=268 + control group n=300) Cluster randomised controlled trial (RCT) – 4 group design (2 controls + 2 experimental)	Lung Prostate Bladder Rectum Breast Cervix Skin Endometrial Non-Hodgkin lymphoma	1. To examine the short-term (3 months) and long-term effects (12 months) of using a screening instrument on psychological distress and HRQOL among cancer patients receiving radiotherapy treatment (RT)	1. Intervention screening instrument: 24-items SIPP ²³ 2. Controls received standard care: no screening instrument but potential referral to psychosocial care by the radiotherapist based on clinical judgment 3. 14-item HADS ²⁴ 4. GHQ-12 ²⁵ 5. 30-item EORTC-CQLQ ²⁶	Pooled	1. No significant intervention effects were observed for patients' extent of psychological distress and the proportion of patients with distress, both on the short and longer term 2. No significant intervention effects were observed on HRQoL on the short and long terms 3. Significant interactions between group x time x referral were found for anxiety and emotional functioning	26/28 93%
8. Butow et al., 2013 (European)	Immigrant cancer survivors (Greek,	Breast Prostate Colorectal	1. To compare prevalence and severity of anxiety	1. Anxiety and depression: HADS 2. QoL: FACT-G ²⁷	Pooled	1. Immigrants had higher levels of depression and	20/22 91%

²² Institute Verbeeten (BVI) – a radiation oncology department in the south of the Netherlands

²³ Dutch Screening Inventory of Psychosocial Problems

²⁴ Hospital Anxiety and Depression Scale

²⁵ 12 items General Health Questionnaire

²⁶ European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire

Journal of Cancer; Australia)	Chinese, Arabic) aged 18-80 years old diagnosed 1-6 years earlier (n=277) + controls (n=319) – from cancer registries Population-based study	Bladder/kidney Leukaemia Lymphomas Head and neck Others	and depression and QoL in a population-based sample of 1 st generation immigrants and Anglo-Australian born controls 2. To explore the contribution of immigrant-related variables such as understanding of the health system to these outcomes			lower levels of QoL compared to Anglo-Australians after controlling for covariates 2. Age was the only variable associated with anxiety in the pooled sample 3. Understanding the health system partially explained the association between depression and QoL and immigrants status	
9. Canoui-Poitaine et al., 2016 (Psycho-Oncology; France)	Baseline data from all elderly cancer patients included in the ELCAPA-10 ²⁸ (n=1092) Cross-sectional analysis	Colorectal Pancreas Esophagus or bile tract Stomach Breast Prostate Kidney or bladder or urinary tract Lung Haematological Unknown primary Skin Ovarian or endometrial Others	1. To assess the prevalence of clinical depression in older patients with cancer 2. To identify patient-related and tumour-related factors independently associated with clinical depression	1. Depression: semi-structured interview by senior geriatrician based on the DSM-IV criteria for major depression	Pooled	1. Univariate analysis – associated with depression: older age, inpatient status, metastases, inadequate social support, functional impairment, 5+ antidepressants p/day, palliative and supportive care 2. Multivariate analysis: inpatient	22/22 100%

²⁷ Functional Assessment of Cancer Therapy - General

²⁸ Elderly Cancer Patients prospective open cohort of consecutive in and outpatients >= 70- years of age

status, inadequate social support, impaired mobility, cognitive impairment, polypharmacy, and cancer-related pain
 3. Higher CIRS-G²⁹(3-4 comorbidities) was independently associated with depression

10. Hardt et al., 2004 (Statistics in Medicine; Germany)	107 patients undergoing cystectomy (removal of the bladder) Prospective and observational (Pre- and post-treatment)	Bladder	1. To investigate which patients undergoing surgical treatment for bladder cancer are particularly at risk of developing decreased QoL. 2. To investigate what is the influence of coping on QoL.	1. QoL – SF-36 2. Coping strategies – 35-item Freiburger Fragebogen zur Krankheitsverarbeitung (FKV) 2. Psychological distress – the trait dimension of State-Trait Anxiety Inventory (STAI)	Bladder cancer data only	1.Active coping has a positive relation to mental QoL at follow up among patients still working before surgery 2. There is a negative effect of depressive coping on mental QoL that is buffered by the continent diversion (depressive coping was –ve associated with mental QoL) pre-surgery 3. The higher the psychological	20/22 91%
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²⁹ Cumulative Illness Rating Scale for Geriatrics (comorbidities)

11. Jacobsen et al., 2013 (Psycho-Oncology; USA)	460 patients about to start chemotherapy were randomised to 4 groups: usual care only, usual care plus stress management, home-based exercise, or stress management plus home-based exercise. 286 completed all 3 assessments.	Breast Lung Bladder Colon Endometrial Kidney Larynx Lip/Oral Mesothelioma Ovarian Prostate Rectal/anal Sarcoma Testicular Unknown primary Uterine Oropharynx	1. To test the effect of a combined stress management training and exercise intervention on QoL during cancer treatment.	1. QoL: SF-36 2. Depression: 20-item Center for Epidemiological Studies Depression (CES-D) 3. Anxiety: 21-item Beck anxiety inventory (BAI) 4. Exercise activity: Leisure Score Index of the Godin Leisure-Time Exercise Questionnaire (LTEQ) 5. Stress reduction activity: Stress Reduction Checklist (SRC)	Pooled	distress, the worse then mental QoL at follow up 4. Psychological distress highly correlated with depressive coping 5. Psychological distress explained by age – younger reported more 1. Combined stress management and exercise intervention was effective in improving depressive and anxiety symptomatology over the course of chemotherapy 2. None of the intervention conditions had a beneficial effect on composite measures of physical and mental QoL relative to usual care	23/28 83%
12. Henningsohn et al., 2003 (BJU International;	All patients undergoing cystectomy across 4 sites in Sweden	Bladder	1. To evaluate how an increasing burden of symptoms influences well-	1. Psychological symptoms and well-being were assessed on a seven-point visual digital scale.	Bladder cancer data only	1. The average well-being increases and the risk of anxiety and depression	15/22 (68%)

Sweden)	(n=306). Matched control randomly selected from the Swedish population register (n=310). Observational pre- and post- treatment with matched controls.		being, anxiety and depression at different intervals after radical cystectomy for bladder cancer	2. Symptom-induced distress was assessed on a verbal scale of intensity and scored using a 6- point likert scale.		decreases at >10 years after cystectomy 2. The total symptom burden, i.e. the number of chronic somatic distressful symptoms, is an important determinant of well-being, anxiety and depression amongst survivors of urinary bladder cancer	
13. Ando et al., 2009 (Journal of Palliative Medicine; Japan)	28 outpatients receiving anticancer chemotherapy, radiation or medication Pre-Post intervention within- participants design	Breast Colon Stomach Bladder	1. To investigate the efficacy of mindfulness on anxiety, depression and spirituality in Japanese cancer patients 2. To determine the association among anxiety, depression, spiritual well-being, growth and appreciation, in addition to physical symptoms	1. Anxiety & depression: HADS 2. Sense of meaning: FACIT-Sp ³⁰ 3. Psychological appreciation: 2 items from Caregiving Consequences Inventory 4. Psychological growth: 3 items from the Benefit Finding Scale	Pooled	1. The only significant change was with anxiety, depression and HADS total scores which reduced after the intervention 2. There were significant relationships between FACIT- Sp (meaning) and HADS, FACIT-Sp and growth, FACIT-Sp and pain and growth and appreciation.	16/28 43%

³⁰ Functional Assessment of Chronic Illness Therapy Spiritual Well-Being Scale

14. Gonzalez et al., 2014 (Support Care cancer; USA)	Community-based participants – 102 cancer survivors attending cancer support groups	Breast Leukemia Bone Bladder Skin Colon Throat Stomach Lung Cervical Ovarian Lymphoma Ampullary	1. To examine the relationship between spiritual well-being and depressive symptoms among cancer survivors 2. To examine which component of spiritual well-being was independently associated with depressive symptoms and which one was most predictive of depressive symptoms	1. Spiritual well-being: 12-item Functional Assessment of Chronic Illness Therapy – Spiritual Well-Being Scale (FACIT-Sp) 2. Depressive symptoms: PHQ-8	Pooled	1. Survivors diagnosed at more advanced cancer stages reported more depressive symptoms 2. Higher spiritual well-being and meaning/peace scores were associated with less depressive symptoms 4. Faith and meaning/peace were independently significantly of depressive symptoms 5. Meaning/peace explained more of the variance in depressive symptoms	20/22 91%
15. Palapattu et al., 2004 (The Journal of Urology; USA)	74 consecutive patients completed preoperative assessment. 62 patients completed both pre- and post-operative assessments	Bladder	1. To assess the psychological distress of patients with bladder cancer and 2. To evaluate the effect, if any, radical cystectomy may have on psychological distress	1. Psychological distress: 18-item Basic Symptom Inventory (BSI-18)	Bladder cancer data only	1. Only anxiety in male changed (decreased) significantly from pre to post-operation 2. There was an increase in distress from pre- to post-operation in all distress variables but somatization for	18/22 82%
	Cross-sectional						
	Prospective						

	(pre- and post-treatment) and descriptive design						the whole sample combined 3. High tumour stage was a significant predictor of anxiety and general distress post-operation	
16. Pedersen & Zachariae 2010 (Scand Journal of Psychology; Denmark)	257 patients referred to chemotherapy were invited. 112 completed questionnaires	Lung Ovarian Bladder Sarcoma	1. To investigate whether repressive coping is protective of ASD in patients with cancer 2. To test both the independent and the interactive effects of trait-anxiety and defensiveness on risk of ASD	1. Acute Stress Disorder (ASD): 30-item Stanford Acute Stress Reaction Questionnaire (SASRQ) 2. Repressive coping: combination of scores from MCSDS ³¹ and TMAS-B ³²	Pooled and stratified (demographics)	1. More women were acutely stressed in comparison to men 2. Repressive coping was statistically significant associated with decreased prevalence of ASD 3. Lower incidence of ASD in true low-anxious patients 4. Anxiety had an effect on severity of ASD but not defensiveness 5. No interaction effect between anxiety and defensiveness on ASD severity	19/22 86%	
	Cross-sectional							

³¹ Marlowe-Crowne Social Desirability Scale

³² Taylor Manifest Anxiety Scale

17. Ho et al., 2004 (Psycho-Oncology: China)	139 female cancer survivors Cross-sectional	Breast Nasopharyngeal Colon Lymphoma Leukemia Stomach Liver Bladder Brain Kidney Lung	1. To explore the relationship between stress, emotional control, psychological symptoms, different coping styles and cancer in Chinese cancer survivors; 2. To explore the extent depressed mood could predict perceived stress and how this relationship would be influenced when a person tends to control the expression of negative emotions and uses different coping strategies	1. Emotional control: 21-item CECS 2. Perceived stress: 10-item Perceived Stress Scale 3. HADS 4. Mental adjustment to cancer: 29-item Mini-Mental Adjustment to Cancer Scale (Mini-MAC).	Pooled	1. Emotional control was closely associated with perceived stress, anxiety, depression, and negative emotions in coping with cancer 2. Patients with high emotional control and negative coping style may have higher stress, anxiety and depression 3. Depression was a significant predictor of perceived stress.	11/22 50%
18. Rabow et al., 2015 (Urologic Oncology; USA)	33 patients receiving usual care with cystectomy vs 30 patients receiving usual care w/cystectomy + palliative care Prospective 6-month serial cohort	Bladder	1. To assess the effect of concurrent palliative care and usual care in bladder cancer according to symptoms, quality of life, and satisfaction	1. Pain: Brief Pain Inventory 2. Fatigue: Cancer Fatigue Scale 3. Depression/Anxiety: HADS 4. Spiritual well-being: Functional Assessment of Chronic Illness Therapy-Spirituality-12 5. Functional Assessment of Cancer Therapy-General	Bladder cancer data only	1. HADS scores for the intervention group decreased after 6 months, whereas control group scores increased. 2. Health-related QoL also improved over time in the intervention group whereas the control group scores decreased slightly. 3. These	22/28 78%

differences remained significant after adjusting for sex, education, disease stage, prior psychiatric history, religion and diversion type.

19. Yoneda et al., 2003 (International Journal of Urology; Japan)	37 consecutive patients with orthotopic neobladder vs 30 patients with ileal conduit Retrospective cross-sectional between group comparisons	Bladder	1. To assess quality of life of patients with orthotopic neobladder and to compare with patients with ileal conduit	1. Health Status: Sickness Impact Profile (SIP) divided in 6 categories: emotions, feelings and sensations, household management, social interaction, usual daily work, recreation and leisure pastime, and taking of nutrition.	Bladder cancer patients only	1. Patients with ileal conduit scored higher in the emotions, feelings and sensations domain of the SIP and the difference was statistically significant	13/22 59%
20. Ficarra et al., 2000 (Urologia internationalis; Italy)	155 patients who were operated 44 controls who underwent retropubic prostatectomy for BPH ³³ Cross-sectional	Renal Bladder Prostate Penile	1. To evaluate the general state of health and the psychological well-being of a group of urological cancer patients	1. Functional capacity: Performance Status ECOG Scale 2. General state of health: GHQ-12 3. Psychological well-being: HADS	Stratified	1. Urological cancer patients had their global health significantly more impaired in comparison to controls; 2. Patients who had a cystectomy were the 2 nd most vulnerable to psychiatric pathology but not	15/22 68%

³³ Benign prostatic hyperplasia

significantly different from controls.

3. Amongst the bladder cancer patients with a ileal conduit diversion were more impaired (health) and had worst levels of anxiety and these were significantly different from controls.

4. Bladder cancer patients were the group with highest prevalence of depression but no sig. difference with the other cancer groups. Those who had ileal conduit diversion were significantly more depressed than those who had the neobladder.

21. Yang et al., 2016 (PLOS One; China)	489 consecutive inpatients Cross-sectional	Bladder Kidney	<p>1. To study the prevalence of depression, anxiety and PTSD in newly diagnosed bladder and kidney cancer patients</p> <p>2. To determine what is associated with depression, anxiety and PTSD after adjusting for demographic and clinical variables</p> <p>3. To measure the association between Snyder's theory of hope, resilience, optimism and psychological disorders</p>	<p>1. Depression: CES-D</p> <p>2. Anxiety: 20-item Zung Self-Rating Anxiety Scale (SAS)</p> <p>3. PTSD: 17-item PTSD Checklist-Civilian Version (PCL-C)</p> <p>4. Perceived social support: 12-item Multidimensional Scale of Perceived Social Support (MSPSS)</p> <p>5. Hope: Adult Hope Scale (AHS)</p> <p>6. Optimism: Life Orientation Scale-Revisited (LOT-R)</p> <p>7. Resilience: 14-item Resilience Scale (RS-14)</p>	Pooled	<p>1. Education, cancer stage and time since diagnosis with statistically significant associated with depression, anxiety and PTSD;</p> <p>2. Perceived social-support and positive psychological resources were negatively associated with depression, anxiety and PTSD</p> <p>3. Psychosocial resources together explained more than one-third of the variance on psychological disorders</p>	20/22 91%
22. Philip et al., 2009 (Urology; UK)	52 consecutive patients who underwent cystectomy Cross-sectional between-group design	Bladder	<p>1. To compare HRQoL between patients who underwent orthotopic bladder reconstruction (OBS) or ileal conduit diversion (ICD) following cystectomy</p>	<p>1. HRQoL: SF-36</p> <p>2. Functional index questionnaire covering domains: urinary, sexual, bowel functions and the distress associated with these, and body image.</p>	Bladder cancer data only	<p>1. There was no difference in role-emotional functioning and mental health between those who had OBS or ICD.</p> <p>2. Both groups found moderate to big problems with sexual function, but those with</p>	12/22 54%

						OBS were more distressed with the sexual dysfunction (no statistics provided)	
23. Gerharz et al., 1997 (The Journal of Urology; Germany)	192 patients who undergone urinary diversion Retrospective survey (cross-sectional)	Bladder	1. To test psychometrics properties of an instrument designed to compare types of diversion and their impact on quality of life 2. To determine the role of disease related social support and coping strategies as intervening factors on quality of life after cystectomy	1. Instrument designed and tested in this study measured degree of mental well-being and disease related social support in between other variables	Bladder cancer data only	1. There were no significant differences between the groups with regards to social support and quality of life including the mental well-being domain 2. Continent reservoir patients were more physically strong, had better mental capacity, had more leisure time activities and were more social competent than ileal conduit patients	18/22 81%
24. Weijerman et al., 1998 (Adult Urology; Netherlands)	56 consecutive patients with heterotopic or orthotopic continent urinary diversion 36 only were included in the QoL analysis	Bladder cancer only	To evaluate morbidity and quality of life in patients with continent urinary diversion	Sickness Impact Profile (SIP) – 65 statements = 6 categories including emotions, feelings and sensations and social interaction	Bladder cancer data only	Those who had a heterotopic diversion had higher SIP scores and poorer QoL. This was independent of age and sex.	12/22 54%

	Pre- and post-treatment						
25. Boyd et al., 1987 (Journal of Urology; USA)	87 consecutive patients with urinary diversion via ileal conduit and 85 consecutive patients with continent Kock ileal reservoir	Bladder cancer only	To investigate the psychological, physical, social and sexual impact of continent versus noncontinent diversion (Kock pouches versus ileal conduits)	Depression: BDI Current Emotional Status: The Profile of Mood States	Bladder cancer data only	1. BDI and Profile of Mood States – similar distribution of scores to the general population 2. None of the groups felt severely impaired physically or socially 3. Notable decrease in the overall level of recreational activities 4. Ileal conduit patients significantly reduced sexual activity and sexual desire post-surgery 5. Ileal conduit patients had higher scores in the BDI and were the only group in the severe category	15/22 68%
	Between-group comparisons						
26. Ali & Kalil, 1989 (Cancer Nursing; Egypt)	30 patients randomised to intervention and control (15 in the experimental	Bladder cancer patients only	To determine the effect of psychoeducational preparation on state anxiety among	The State-Trait Anxiety Inventory (STAI) was used to measure state anxiety	Bladder cancer patients only	1. There was no difference in state anxiety between experimental and control group	19/28 68%

and 15 in the control groups). All patients interviewed before surgery, 3 days after and before discharge (12th day)

Pre- and post-test control group (mixed methods)

Egyptian bladder cancer patients with urinary diversion

Qualitative questions including: 'have you have any treatment for psychological upset?' and 'what are you worried about right now?'

Psychoeducation intervention given 1-2 days before surgery. Control group received routine physical preoperative care

before surgery (M control =61.40/M exp.=60.73)
2. An increase in state anxiety on the 3rd day post-surgery also led to an increase in anxiety before discharge and there was a significant difference between the two groups
3. Preoperative psychoeducation significantly reduced anxiety in the 3rd day post-surgery
4. Preoperative psychoeducation significantly reduced anxiety before discharge

[§] Key for quality scores according to Ghannouchi et al., 2016:



Poor (0-50%)



Adequate (51-59%)



Good (60-79%)



Excellent (80-100%)

Study Quality Ratings

Of the 26 studies included in this review, one was rated as 'poor' quality (Ando et al., 2009), six studies received a rating of 'adequate' (Ahmed et al., 2004; Ho et al., 2004; Mansson et al., 2000; Philip et al., 2009; Weijerman et al., 1998; Yoneda et al., 2003), seven were considered as 'good' (Ali & Khalil, 1989; Biegler et al., 2012; Boyd et al., 1987; Ficarra et al., 2000; Henningsohn et al., 2003; Mansson et al., 1998; Rabow et al., 2015), with 12 studies receiving a 'strong' quality rating according to the Kmet criteria (Ghannouchi et al., 2016; Kmet et al., 2004) (Arora et al., 2009; Braeken et al., 2013; Butow et al., 2013; Canoui-Poittrine et al., 2016; Gerharz et al., 1997; Gonzalez et al., 2014; Hardt et al., 2004; Jacobsen et al., 2013; Palapattu et al., 2004; Pedersen & Zachariae 2010; White et al., 2014; Yang et al., 2016).

The median quality score of studies included in this review was good (73%), the study that received the lowest quality score ($16/28 = 43\%$) (Ando et al., 2009) was an intervention study without randomisation and a small sample size ($n=28$).

Whereas the two studies that obtained a perfect score ($22/22 = 100\%$) (Arora et al., 2009; Canoui-Poittrine et al., 2016) were large epidemiological surveys that, despite their cross-sectional design and its limitation to prove causality, were methodologically robust.

Results from the inter-rater reliability analysis suggested an acceptable reliability between the two independent raters for the random sample of studies analysed, with Cronbach's $\alpha = 0.78$ (average measures ICC).

Psychological issues related to treatment options for bladder cancer

Results from the papers reviewed suggest that radical cystectomy³⁴ followed by a diversion³⁵ is the most common treatment undertaken for muscle-invasive bladder cancer. Only two studies (Ando et al., 2009; Braeken et al., 2013) included patients who were receiving radiotherapy, anticancer chemotherapy or medication. However, both studies covered different cancer sites and presented results for all cancers combined, not taking into account for the heterogeneity of treatment options and their independent effect on psychological outcomes. Five out of six studies that compared pre- and post-treatment outcomes (Hardt et al., 2004; Henningsohn et al., 2003; Palapattu et al., 2004; Weijerman et al., 1998) did not include patients undergoing radiotherapy, in addition none of the studies that compared outcomes between types of diversions (specifically for bladder cancer) (Boyd et al., 1987; Gerharz et al., 1997; Mansson et al., 1998; 2000; Philip et al., 2009; Rabow et al., 2015; Weijerman et al., 1998; Yoneda et al., 2003) mentioned radical radiotherapy as treatment.

Outcome Measures

A large number of outcome measures are available to measure depression and anxiety in research and clinical settings and this heterogeneity is present in the studies included in this review. The most common questionnaires used in the studies reviewed included the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) (n=6, Ando et al., 2009; Braeken et al., 2013; Butow et al., 2013;

³⁴ Surgery to take out the whole bladder and the nearby lymph nodes. In men the surgeon also takes the prostate out. In women the surgeon may need to take the womb and ovaries as well (Bladder cancer treatment, 2016)

³⁵ See section on specific treatment outcomes on page 45 and 57

Ficarra et al., 2000; Ho et al., 2004; Rabow et al., 2015;) and the mental component of the 36-Item Short-Form Health Survey (SF-36; Ware Jr. & Sherbourne, 1992) (n=5, Arora et al., 2009; Hardt et al., 2004; Jacobsen et al., 2013; Philip et al., 2009; White et al., 2014). The Functional Assessment of Chronic Illness Therapy – Spiritual Well-Being (FACIT-Sp; Peterman, Fitchett, Brady, Hernandez, & Cella, 2002) can be used to measure well-being in general and was used by three of the studies included in this review (Ando et al., 2009; Butow et al., 2013; Gonzalez et al., 2014). Other measures used were the Centre for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) (Jacobsen et al., 2013; Yang et al., 2016), the 12-Item General Health Questionnaire (GHQ; Goldberg, 1978) (Braeken et al., 2013; Ficarra et al., 2000), the eight-item Patient Health Questionnaire depression scale (PHQ-8; Kroenke et al., 2009; Kroenke & Spitzer, 2002) (Gonzalez et al., 2014), the Zung Self Rating Depression Scale (ZSDS; Zung, 1965) (Ahmed et al., 2004), the Functional Assessment of Cancer Therapy – General (FACT-G; Cella et al., 1993) (Butow et al., 2013) and the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) (Boyd et al., 1987). Only one study carried out structured clinical interviews based on the Diagnostic Statistical Manual for Mental Disorder 4th edition (DSM-IV, American Psychiatric Association, 2000) criteria for major depression (Canoui-Poitaine et al., 2016).

One study (Jacobsen et al., 2013) used the Beck Anxiety Inventory (BAI, Beck, Epstein, Brown, Steer, & others, 1988) to measure anxiety, another study used the A-State form of the State Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) to measure state anxiety (Ali & Khalil, 1989), and Yang et al., (2016) used the Self-Rating Anxiety Scale (SAS; Zung, 1971).

Pedersen & Zachariae (2010) assessed predictors of acute stress disorder (ASD) which the author accepted as a proxy for psychological distress. ASD was measured using the 30-item Stanford Acute Stress Reaction Questionnaire (SASRQ) (Cardeña, Koopman, Classen, Waelde, & Spiegel, 2000).

Two studies (Biegler et al., 2012; Palapattu et al., 2004) assessed psychological distress through the Brief Symptom Inventory-18 (BSI-18) (Derogati, 2001), and two studies (Weijerman et al., 1998; Yoneda et al., 2003) used the Sickness Impact Profile (SIP) (Bergner, Bobbitt, Carter, & Gilson, 1981), a measure of health status, which contains domains covering emotional well-being and social support.

The remaining four studies included in this review (Boyd et al., 1987; Gerharz et al., 1997; Henningsohn et al., 2003; Mansson et al., 2000; Mansson et al., 1998) used a variety of other measures to assess different components of psychological distress such as emotional control and current emotional status, mental adjustment, coping styles, personality traits, optimism, perceived social support, resilience as well as other potential outcomes such as posttraumatic stress disorder (PTSD).

Contributors to Psychological Distress

The main objective of this review was to ascertain the most common contributors of psychological distress among people who received a diagnosis of bladder cancer. As per the results of the outcome measures described above, there was also a high degree of heterogeneity with regards to what factors were categorised as potential contributors to psychological distress.

An analysis of the results' sections of the 26 articles included in this review attempted to identify the most common themes and patterns of potential contributors to the presence of depression and/or anxiety in bladder cancer patients. Eight categories were identified, namely 1) bladder cancer specific treatments, 2) psychological factors and resource, 3) socio-demographic factors, 4) social support, 5) cancer related factors, 6) functional and cognitive impairment, 7) physical health, and 8) interventions. Table 4 shows the specific items constituting each category.

Table 4 – Contributors to psychological distress (depression and/or anxiety)

Studies ID	Broad Categories	Detailed Description
1,3, 6, 11, 14, 16, 17, 19, 20, 25	Psychological factors/resource	Personality traits, self-esteem, emotional control, spirituality/religion, coping
4, 5, 8, 9, 11, 19	Socio-demographic factors	Age, sex, education, understanding of health system, minority group
6, 9, 20, 25	Social support	Including social isolation
9, 14, 15, 21	Cancer-related factors	Stage of cancer, time since diagnosis, metastasis; inpatient or outpatient
4, 9	Functional and Cognitive impairment	Difficulties in carrying out activities of daily living
4, 5, 9, 13	Physical health	Comorbid physical health problems, pain, somatic symptoms
7, 11, 13, 18, 26	Interventions	Mindfulness, stress management, exercise, palliative care, screening
2, 3, 10, 18, 19, 22, 23, 24, 26	Bladder cancer specific treatment	Radical cystectomy, types of diversion, topical therapy (BCG)

Due to the non-experimental nature and cross-sectional analyses of twenty-three studies (out of twenty-six) included in this results need to be interpreted with caution in relation to cause and effect. Results suggested that the most common factors associated with psychological distress were related to 1) different types of diversion used after radical cystectomy for the treatment of bladder cancer (Boyd et al., 1987; Ficarra et al., 2000; Gerharz et al., 1997; Mansson et al., 2000; Palapattu et al., 2004; Philip et al., 2009; Weijerman et al., 1998; Yoneda et al., 2003), 2) psychological factors such as personality traits, self-esteem and coping styles (Ahmed et al., 2004; Biegler et al., 2012; Gonzalez et al., 2014; Hardt et al., 2004; Ho et al., 2004; Mansson et al., 1998; Pedersen & Zachariae 2010; Yang et al., 2016), and 3) socio-demographic factors such as age and gender (Arora et al., 2009; Butow et al., 2013; Canoui-Poitaine et al., 2016; Pedersen & Zachariae 2010; White et al., 2014).

Cancer-related factors (5 = Canoui-Poitaine et al., 2016; Gonzalez et al., 2014; Henningsohn et al., 2003; Palapattu et al., 2004; Yang et al., 2016), interventions (5 = Ali & Khalil, 1989; Ando et al., 2009; Braeken et al., 2013; Jacobsen et al., 2013; Rabow et al., 2015), social support (4 = Biegler et al., 2012; Canoui-Poitaine et al., 2016; Ho et al., 2004; Yang et al., 2016), physical health (4 = Arora et al., 2009; Canoui-Poitaine et al., 2016; Henningsohn et al., 2003; White et al., 2014) and functional and cognitive impairment (2 = Canoui-Poitaine et al., 2016; White et al., 2014) categories were also analysed. It is important to note that there will be an overlapping of studies between categories.

Bladder cancer specific treatments.

With half of the studies included in this review analysing data on bladder cancer only, it is understandable that the majority of these would focus on specific aspects of treatment for this cancer type and their association with psychological distress.

Results suggested that those patients who had an ileal conduit diversion after radical cystectomy³⁶, as opposed to an orthotopic diversion³⁷, had higher levels of psychological distress or had poorer overall and emotional health as measured by the SIP (Ficarra et al., 2000; Gerharz et al., 1997; Yoneda et al., 2003). Similar findings were described by Boyd et al., (1987) using the BDI where those who had a urinary diversion via ileal conduit were the only group in the 'severe' category of the BDI, this group also had the poorest self-image in comparison to those who had a continent Kock ileal reservoir (Boyd et al., 1987). By contrast, one study concluded that orthotopic bladder reconstruction after cystectomy, and its post-operation symptoms, influenced psychosocial variables but this study did not use a control group nor a comparison group that had a different type of diversion (Mansson et al., 2000). One study found an increased level of distress post-cystectomy (Palapattu et al., 2004), with one study suggesting that cystectomy increases the risk of psychiatric disorders (Ficarra et al., 2000). Another study found similar levels of distress between those who had an orthotopic reconstruction or an ileal conduit

³⁶ One type of diversion done after cystectomy. In the ileal conduit a small opening in the abdomen called a stoma, or mouth, is created. The surgeon then takes a short segment of the small intestine (that has been removed from the rest of the intestine) and connects one end to the stoma. The ureters, which normally carry urine from the kidneys to the bladder, are attached to the other end of the segment of intestine (Bladder Cancer Advocacy Network, 2016).

³⁷ Or orthotopic neobladder diversion: another type of diversion after cystectomy considered to provide better QoL for patients because it avoids the creation of a stoma (Lawrentschuk & Chang, 2015). It recreates the bladder by building an internal reservoir from segments of small intestines.

diversion, but suggested that those who had the orthotopic reconstruction were more distressed due to sexual dysfunction (Philip et al., 2009).

Psychological factors

One study used a visual analogue scale (VAS) to measure perceived difficulty in adjusting to life after cystectomy (followed by diversion) and its association with defensive strategies (“which determines how one manages and copes with difficult situations and threats” Mansson et al., 1998, p.349). Results suggested that those with primitive defence strategies apparently had a long-term risk of poor adaptation. This pre and post-treatment follow up study also found correlations between pre-operation levels of anxiety about future relationships, worry about recurrence and worry about function of the urinary tract system after diversion and postoperative distress and emotional problems (Mansson et al., 1998). The impact of personality traits on depression was assessed in one study (Ahmed et al., 2004), which found that trait anxiety was the only significant independent variable associated with depression.

Coping styles and their impact on psychological distress were also assessed. In a cross-sectional study with men suffering from prostate, bladder and renal cancers, engagement and avoidant coping were positively associated with distress, but religion/spirituality buffered the association between engagement coping and distress before surgery (Biegler et al., 2012). In a prospective-observational study (Hardt et al., 2004), results showed that depressive coping defined as “showing negative emotions in thoughts and interpersonal relationships” (Hardt et al., 2004, p. 654) was highly associated to psychological distress, whereas active coping had a

positive impact on the mental component of QoL. In a cross-sectional study from Denmark, repressive coping, defined as non-expression of negative emotions (Weinberger, 1990), was associated with decreased prevalence of acute stress disorder (ASD) with anxiety having an effect on the severity of ASD (Pedersen & Zachariae, 2010). Negative coping (for example, hopelessness and anxiety preoccupation), combined with higher levels of emotional control, contributed to higher stress, anxiety and depression in a cross-sectional study with Chinese women (Ho et al., 2004).

Gonzalez et al. (2014) assessed spiritual well-being in their cross-sectional study from the US. Findings suggested that higher spiritual well-being and higher scores in faith (individual's religious/spiritual beliefs) and meaning/peace (i.e. an individual's sense of purpose and meaning in life) were correlated with less depressive symptoms.

Finally, a large cross-sectional study from China looked into internal and external psychosocial resources and their contributions to psychological disorders. Results suggested that those with higher levels of internal resources such as hope, optimism and resilience were at a lower risk of developing psychological disorders (Yang et al., 2016).

Socio-demographic factors

White et al.'s. (2014) large US cross-sectional analysis of different cohorts of patients from cancer registries found that bladder cancer was one of the cancer types associated with major depressive disorder (MDD). Furthermore, participants who

were older than 85 years of age and female were more likely to receive a bladder cancer diagnosis. Another population-based survey carried out in the US (Arora et al., 2009) studied the association between physician decision-making style (communication) and patients' outcomes, including mental health (as measured by the mental health component of the SF-36, Ware Jr & Sherbourne (1992)). Bivariate and multivariate models identified age as one of the variables that remained significantly associated with mental health (as measured by the mental component of the SF-36). Although this finding is described no actual empirical data is provided in the text, therefore it is difficult to ascertain its direction (i.e. older age and more comorbidities associated with poorer mental health). Path analysis suggested that a more participatory physician style might be associated with better mental health by a) "increasing survivor's participation self-efficacy and thereby enhancing control, and by b) enhancing survivor's level of trust and thereby reducing uncertainty" (Arora et al., 2009, p.410).

An Australian population-based survey (Butow et al., 2013) compared health outcomes of cancer patients between immigrants and Anglo-Australians. Results identified age and being an immigrant as significant predictors of anxiety and depression respectively. Measured by the HADS (Zigmond & Snaith, 1983), the prevalence of anxiety decreased with age and immigrants had significantly higher levels of depression than their Anglo-Australian counterparts. A German study with bladder cancer patients only (Hardt et al., 2004) also demonstrated an association between age and psychological distress, whereby younger cancer patients reported increased distress. Age was also significantly associated with depression in a large French cross-sectional study (Canoui-Poitaine et al., 2016) but only in univariate

analysis and, differently from the Australian and German studies; in this case older age was associated with depression.

Aside from the studies that included only one gender group, only one study mentioned gender as a potential predictor (Pedersen & Zachariae, 2010). In this cross-sectional survey female patients had significantly higher scores on measures of depression than their male counterparts.

Psycho-oncology interventions

Five studies included in this review (Ali & Khalil, 1989; Ando et al., 2009; Braeken et al., 2013; Jacobsen et al., 2013; Rabow et al., 2015) tested specific psycho-oncology interventions aimed to improve health outcomes in cancer patients, including psychological distress. One of the oldest studies identified in this review and one of the few from a developing nation, tested an intervention in the form of psychoeducation prior to surgery for the treatment of bladder cancer and results suggested a reduction in anxiety scores at the 3rd postoperative day (Ali & Khalil, 1989). Another study suggested that applying a screening instrument to assess psychological distress in patients undergoing radiotherapy was not associated with an improvement in quality of life in the short- and long-term (Braeken et al., 2013), although this study found significant three-way interactions between group and time and referral for anxiety and emotional functioning.

A combined stress management and exercise intervention was effective in improving depressive and anxiety symptomatology over the course of chemotherapy in cancer patients (Jacobsen et al., 2013), but the effect did not surpass that of usual care; in

addition, this study included a large number of cancer types (17 in total), which were analysed together therefore it is difficult to draw conclusions about bladder cancer specifically. In a Japanese study that included four different cancers, mindfulness techniques were associated with a reduction in anxiety scores, but not depression. However, this study included only 28 participants of whom only one had bladder cancer (Ando et al., 2009). The addition of palliative care to usual care in bladder cancer patients was associated with improved health-related outcomes in all areas in a US study (Rabow et al., 2015) when compared to outcomes from those who receive only usual care, with HADS scores for the intervention group decreasing and HRQoL improving after 6 months of follow up.

Other relevant factors

This section combines categories encompassing factors less frequently studied in the articles included in this review.

A lack of social support and feelings of isolation were also significantly associated with psychological distress (Biegler et al., 2012). The presence of comorbidities such as cardiovascular disease, diabetes or arterial hypertension, common features of old age, were also associated with depression (Canoui-Poitaine et al., 2016; White et al., 2014) and scores in the mental component of the SF-36 (Arora et al., 2010).

Additionally, functional and cognitive impairment, which also increase with age, were found to be associated with psychological distress defined as major depressive disorder (White et al., 2014) and clinical depression (Canoui-Poitaine et al., 2016) as measured by the Diagnostic Interview Schedule (DIS) and semi-structured clinical

interview with a geriatrician respectively. Inpatient status, metastases, and stage of cancer were all significantly associated with psychological distress (Canoui-Poitaine et al., 2016; Gonzalez et al., 2014; Palapattu et al., 2004; Yang et al., 2016).

DISCUSSION

Contributors of psychological distress in bladder cancer

Results from this review suggest that in bladder cancer contributors to psychological distress fall into 8 broad categories: 1) bladder cancer specific treatments, 2) psychological factors and resource, 3) socio-demographic factors, 4) social support, 5) cancer related factors, 6) functional and cognitive impairment, 7) physical health, and 8) interventions.

Some of the factors identified in this review are similar to those identified by research in other cancer types. For instance, Hurria and colleagues (2009) used the Distress Thermometer (Hoffman, Zevon, D'Arrigo, & Cecchini, 2004) to ascertain the prevalence of distress in a cohort of patients diagnosed with 5 different types of cancer and found that requiring assistance with instrumental activities of daily living (functional impairment) and having 3 or more comorbid medical conditions (physical health) were significantly correlated to distress (Hurria et al., 2009). Other studies have found that younger age was associated with distress in various cancer patients (Naughton & Weaver, 2014; O'Hea et al., 2014). Whereas this review suggests that in bladder cancer older age is more likely to be associated with distress independently of number of comorbid physical conditions.

This review suggests that psychological factors play a significant role in the occurrence of psychological distress in bladder cancer patients. Some of the studies included suggest that patients with depression pre-surgery predicted difficult adjustment 3 months after surgery. Indeed, other studies with different cancer types

identified that poor psychological well-being in patients will affect their adjustment to the cancer diagnosis itself (Naughton & Weaver, 2014), their ability to accept the diagnosis and engage with changes in life styles and routine (Brower, 2014; Fang & Schnoll, 2002), and their engagement with medical treatments, including mental health treatment (Macmillan Cancer Support, 2011; Weinberger, Bruce, Roth, Breitbart, & Nelson, 2011). Poorer psychological well-being may also affect interpersonal relationships (Gregurek et al., 2010), may cause problems with self-image and self-esteem and impact on survival (Brower, 2014). Poorer self-image and impaired self-esteem were also identified in this review as significant contributors to distress in bladder cancer patients.

Research suggests a strong link between coping styles and QoL in cancer, with some studies suggesting that coping styles, particularly active coping strategies, are the most important contributors of better QoL (Avis, Smith, McGraw, Smith, & Petronis, 2005; Danhauer, Crawford, Farmer, & Avis, 2009; Lehto, Ojanen, & Kellokumpu-Lehtinen, 2005). Although many of these studies focus on women with breast cancer, results from this review also showed that coping strategies do play an important role in predicting distress in bladder cancer. In a longitudinal study with younger women with breast cancer, Danhauer et al., (2009) suggested that coping styles change over time and that active coping strategies (e.g. seeking social support, making changes, spirituality) are predictors of better QoL (Danhauer et al., 2009). In the present review, 'avoidant' and 'depressive' coping strategies were linked to distress, whereas spirituality was seen as either acting as a buffer against distress or directly predicting better psychological well-being.

Treatment-specific aspects

Results from this review suggest that unique aspects of bladder cancer treatment made significant contributions to psychological distress. Research in this area has highlighted that radical cystectomy, and the type of diversion used afterwards, is one of the most traumatic cancer treatments due to its impact on body image and sexual functioning (Mansson et al., 1998).

Nearly all of the studies included in this review that focused on bladder cancer only compared outcomes between different methods of diversion used after radical cystectomy. Types of urinary reconstruction and diversions are known to affect QoL differently. According to Sherwani Afak and colleagues “there are inherited advantages and disadvantages to each form of urinary diversion and patient selection is important to identify the most appropriate method of diversion for an individual” (Sherwani Afak, Wazir, Hamid, Wani, & Aziz, 2009, p.9).

The method that uses an external pouch to store urine (known as the ileal conduit), is considered the simplest of methods, but is the one with the most negative consequences for QoL and psychological distress due to changes in body image, sexual function and the constant risk of leakage and odour (Gerharz, Mansson, & Mansson, 2005; Metcalfe et al., 2013); this review provides further evidence for this association.

Age is one of the criteria used to decide on the type of diversion made. Elderly patients tend to be primarily offered ileal conduit diversions whereas ileal neobladders (the process that most closely matches normal urination) tend to be

reserved for younger and healthier patients, underlying an 'appreciable difference in age' (Gerharz, Mansson, & Mansson, 2005, p. 203; Shariat et al., 2009). Indeed, other studies have shown that patients with an ileal conduit were 10 years older on average than patients who had an orthotopic bladder substitution (Dutta et al., 2002). Therefore, older people with bladder cancer may do worse psychologically as a result of the treatment they were offered.

Results from this review are similar to other reviews on QoL and bladder cancer with regards to the limited number of papers identified that focused on other treatments other than radical cystectomy, such as transurethral resection, chemotherapy, and radiotherapy (Gerharz, Mansson, & Mansson, 2005). Although NICE recommends radiotherapy for some bladder cancer cases, findings suggest that either radiotherapy is not prescribed as often or not studied as often as radical cystectomy. This is surprising in view of the fact that some meta-analytical studies showed that there was no significant differences in survival rates between cystectomy and radiotherapy patients (Advanced Bladder Cancer (ABC) Meta-analysis Collaboration, 2005; Advanced Bladder Cancer Meta-analysis Collaboration, 2003).

Recent reviews have highlighted that different interventions to treat bladder cancer can produce different outcomes with relation to quality of life and psychological distress. NICE (2015) recommends that people with newly diagnosed muscle-invasive bladder cancer should receive a course of neoadjuvant chemotherapy³⁸ before radical cystectomy or radical radiotherapy. NICE recommends offering a

³⁸ Treatment given as a first step to shrink a tumour before the main treatment, which is usually surgery or other local treatments (e.g. radiotherapy) (NCI, 2016)

choice of radical cystectomy or radiotherapy for those considered suitable for radical therapy. NICE also stresses the importance of informed decision-making by the patient so multidisciplinary teams need to “ensure that the choice is based on a full discussion between the person and a urologist who performs radical cystectomy, a clinical oncologist and a clinical nurse specialist” (NICE, 2015, p. 19). The guideline also recommends that for those who chose to have radical cystectomy patients should be offered “a urinary stoma³⁹ or a continent urinary diversion⁴⁰ (bladder substitution or a catheterisable reservoir⁴¹) if there are no strong contraindications to continent urinary diversion such as cognitive impairment, impaired renal function or significant bowel disease” (NICE, 2015, p. 20).

Age-specific Issues

An unexpected demographic finding from this review, and one replicated by other studies in the literature (Hurria et al., 2009), was that although age is the main risk factor for many kinds of cancer, few studies focused on people with bladder cancer aged 65 years and over; only two out of 26 studies in this review included this demographic (Canoui-Poittrine et al., 2016; White et al., 2014). Current estimates from the WHO suggest that over 20% of the elderly population (>60) suffer from a mental or neurological condition, with neuropsychiatric conditions accounting for

³⁹ Or urostomy is a surgical procedure which diverts the normal flow of urine from the kidneys and ureters into a specially created stoma. The stoma looks like a small spout sticking out of the abdomen. This is the simple and most straightforward form of urinary drainage after surgery (Cambridge University Hospitals, 2016b)

⁴⁰ Alternative way of collecting and storing urine after surgery. The surgeon will create a reservoir to collect urine and a channel to carry the urine to the outside of the body. The channel will be attached to a stoma in the abdomen. The process uses valves so that the urine should not leak out of the stoma. Patients are able to empty the urinary reservoir using a catheter (Cambridge University Hospitals, 2016a)

⁴¹ Two different categories/types of continent urinary diversion. For more about this please refer to Moon, Vasdev, & Thorpe, 2013.

6.6% of the total disability in this age group (WHO, 2016). In addition, 60% of cancer diagnoses and 70% of cancer mortality occurs in people aged >65 years (Ries et al., 2006). The combination of these two factors may put older people with cancer at a higher risk to develop psychological problems (Hurria et al., 2009). As seen previously in this review, in bladder cancer age is a criterion for the type of treatment offered with older adults usually receiving treatments with the worse QoL outcomes. Despite these statistics and the risk of older adults do worse psychologically few studies are aimed at exploring the relationship between psychological distress and cancer in this age group.

Older adults are also more likely to experience co-morbid physical health problems. The presence of comorbidities may independently impact on psychological distress regardless of cancer status, thus confounding potential significant associations. Therefore, studies involving older adults, psychological distress and cancer needs to account for these either in the design or in the statistical analyses. Results from this review showed that in both studies that included only older adults (Canoui-Poitaine et al., 2016; White et al., 2014), comorbidities were treated as potential confounding factors and were controlled for in the analyses. However, the other 24 studies that included a wider age range of participants with a proportion of those being over 65 years old, did not measure comorbidities.

Variability in study methodologies and quality

Results from this review confirmed the issue of variability in study designs and methodological quality in this field of research. There was also a large variety of

measures used to assess both psychological distress and QoL, thus limiting comparisons across studies.

As previously described, QoL is a complex multidimensional construct (Fallowfield, 2009) and many see psychological distress as an embedded concept within QoL. However, many others see psychological distress as an *independent* construct and multidimensional on its own right – the concept tends to encompass mental health problems such as depression, anxiety, deliberate self-harm, etc. (NICE, 2004).

Twelve different questionnaires were used to measure different domains of psychological distress across the 25 studies included in this review, with one study utilising a clinical interview. The most used questionnaires were the HADS or the mental component of the SF-36. Some authors have identified some limitations of the widespread use of the HADS in cancer and palliative care suggesting that its optimal performance is as a screening instrument only but not as a case-finding tool (Mitchell, Meader, & Symonds, 2010).

Randomised Control Trials (RCTs) are regarded by many as the gold standard in mental health care research (Nezu & Nezu, 2008) as they can provide better evidence about complex and questionable research questions (Slade & Priebe, 2001). In this review, only two studies were RCTs (Braeken et al., 2013; Jacobsen et al., 2013) and the only other two studies that scored 100% in the quality framework were large epidemiological surveys (Arora et al., 2009; Canoui-Poitaine et al., 2016). Given that most studies utilised a retrospective and cross-sectional design, results need to be interpreted with caution due to their inability to prove causality and their

limited generalisability. In addition, recall and non-response bias may have affected the outcome measures of psychological distress and QoL. This methodological limitation has previously been identified within the bladder cancer literature (Gerharz, Mansson, & Mansson, 2005).

Psychological distress in cancer

Psychological distress has been largely studied in the field of oncology as a result of the known link between mental and physical health (Prince et al., 2007). Research in this field tends to focus on understanding the risk factors for poorer psychological well-being in cancer patients and understanding the impact this could have on a patient's personal and social life and their future engagement in healthy behaviours and treatment. Understanding both the risks and the consequences of poorer mental health is essential to promote preventative strategies and treatment options to improve QoL in general.

Depression and anxiety are commonly seen as components of the broader psychological distress construct. Studies have shown a higher prevalence of these conditions in cancer patients than in the general population, despite significant variability related to different types, sites and severity of cancer, different types and stages of treatment or how distress was conceptualised and measured (Hernández Blázquez & Cruzado, 2016; Hurria et al., 2009; Mitchell et al., 2011; Naughton & Weaver, 2014; NICE, 2004). Studies have reported prevalence rates for any type of depression in cancer patients ranging from 3.9% to 25% (Mehnert et al., 2014; Mitchell et al., 2011; Strong et al., 2007) and for anxiety disorders the rate varies

from 3.6% to 18.4% across all stages of cancer (Hernández Blázquez & Cruzado, 2016; Mehnert et al., 2014; Miovic & Block, 2007; Mitchell et al., 2011).

Some of the risk factors identified in other research studies on psychological distress and health-related QoL (poorer mental health) in cancer survivors were younger age, lower levels of education, higher comorbid physical health problems, lower income, not having a partner or not being married (Hong, Zhang, Song, Xie, & Wang, 2015; Short & Mallonee, 2006; Weaver et al., 2012). Loss of independence and functional limitation were also identified as potential predictors of psychological distress in cancer patients generally – a finding similar to the one of this review (Hurria et al., 2009; Valdes-Stauber, Vietz, & Kilian, 2013).

Implication for service provision

The robust evidence produced by the field of psycho-oncology and clinical psychology that psychological distress affects cancer health-related outcomes has helped shaped changes in service provision. For instance, in the UK the need for screening for psychological problems has been included in the guidelines to all cancer services (NICE, 2015) thus integrating psychological care within routine oncology care (Schoorhuizen et al., 2015). Although improvements in the provision of an integrated care have taken place for many cancers, there is still some imbalance in providing psychological interventions to less prevalent cancers. Such imbalance is also translated into research studies and is somewhat represented in the findings of this review and the small numbers of studies focusing on psychological distress and bladder cancer specifically.

However, some authors have suggested that improving screening and case finding does not necessarily translate in better mental health, leading to suggestions that a tailored mental healthcare system is the “missing link between improved case finding and better emotional well-being” (Singer et al., 2013, p. 2291). More specifically, results from this review suggest that bladder cancer treatment and its uniqueness demands the use of disease-specific instruments to measure QoL and psychological distress. Although this review did not focus primarily on QoL, it included studies that assessed QoL and stratified results by their domains (including emotional well-being (i.e. psychological distress)). None of the studies used bladder specific QoL measures and as a result the extent of the impact of bladder-specific symptoms on people’s QoL may have been underestimated.

Bladder cancer is one of the 10 most prevalent cancers in the UK but it does not attract as much attention and research in comparison to others type of cancers such as prostate or breast. In addition, bladder cancer is also one of the most expensive to healthcare systems. Direct costs are related to continuous and intensive routine surveillance and testing (e.g. cystoscopy) due to long-term survival rates. Indirect costs are in the form of time of patients and caregivers and reduced social and physical functioning (Botteman, Pashos, Redaelli, Laskin, & Hauser, 2003; Yeung, Dinh, & Lee, 2014). Any cancer will result in significant changes in an individual’s life, but each cancer will also result in specific site-related and treatment-related issues that will affect QoL and psychological well-being. In the case of bladder cancer, factors such as adaptation to a stoma, constant uneasiness around urine leakage, skin infections, body image alterations, sexual and sleep dysfunctions (Gerharz, Mansson, Hunt, Skinner, & Mansson, 2005; Henningsohn, Wijkstrom, Steven, et al.,

2003b; Thulin, Kreicbergs, Wijkström, Steineck, & Henningsohn, 2010) have been identified as specific problems contributing to a poorer QoL. Therefore, the more cancer-specific a study on QoL and psychological distress is, the more likely findings can be translated to real life interventions.

Implications for Clinical Psychology

Results from this review suggest that some psychological factors such as coping strategies, feelings of isolation, and pre-existing mental health are important contributors to psychological distress. As psychological distress per se is an important predictor of engagement in treatment and is hypothesised to impact survival (Brower, 2014) it is essential that clinical psychologists working in cancer care address patients' psychological needs. Psychological support offered using a stepped care approach to improve access to psychological therapies has been advocated due to its cost-effectiveness (Bower & Gilbody, 2005; Richards, 2012). The current NICE guidelines for improving support for patients with cancer (NICE, 2004) recommends psychological support services to adopt a 4-level model of professional assessment and intervention (Appendix 2).

Understanding the trajectory of psychological distress and that it is a multifactorial construct that extends along a continuum (NCCN, 2014) will contribute to the delivery of good evidence-based interventions and the implementation of preventative measures. On an individual level, psychological interventions have been shown to be effective in patients with cancer (Raingruber, 2011). For example, a recent Cochrane review with breast cancer patients showed that cognitive behaviour therapy (CBT) was effective in improving levels of anxiety, depression and

mood disturbance (Jassim, Whitford, Hickey, & Carter, 2015). CBT, individual or group based, is also the method recommended for patients with chronic conditions who are also presenting with depression (NICE, 2009). However, NICE acknowledges the need of intervention to be person-centered and tailored to the needs of the individual, an argument also put forward by other authors (Singer et al., 2013). However, the role of clinical psychologists in cancer care goes beyond screening, assessment and intervention, also involving consultation and leadership. Clinical psychologists can help to promote better psychological well-being across all 4-levels by providing training to staff to enable recognition of distress in any stage of the cancer pathway and the tools they can use to reduce this distress (e.g. problem solving techniques), by empowering staff on their ability to help others, by providing knowledge about when to refer to more specialised services and what is the procedure for it, and by providing support to staff and supervision. The consequences of untreated psychological distress may involve significant negative outcomes such as clinical depression or non-adherence to cancer treatment (Naughton & Weaver, 2014) therefore recognition and treatment are essential. Bladder cancer services ought to make psychological support available to all patients.

However, the results from the current review have highlighted that other areas such as functional limitation, comorbidities and urinary diversion type can also impact on psychological distress. Therefore, in clinical practice it is fundamental that clinical psychologists, and other health professionals, adopt a multi-dimensional stance such as the biopsychosocial model (Engel, 1981), when providing care for bladder cancer patients.

Implications for research

This review has highlighted a gap in the cancer literature and the lack of evidence examining the link between psychological distress and bladder cancer. Despite the fact that bladder cancer is a cancer of old age, few studies focussed on older adults only.

Although this review focused in quantitative studies that explored psychological distress defined as psychological well-being, anxiety, depression, hopelessness or acute stress with relative large sample sizes, qualitative studies in their exploratory nature can be helpful in providing more in-depth understanding of the reasons underlying psychological distress including specific bladder cancer outcomes.

Results from this review need also to be interpreted with caution as most of the studies had a retrospective and cross-sectional nature. Longitudinal studies are essential to provide more robust findings on contributors or predictors of psychological distress, as some authors have suggested that distress changes over time (Brinkman et al., 2013; Naughton & Weaver, 2014); longitudinal studies would also enable researchers to clarify what factors affect distress the most over time and could shed more light on the on-going relationship between psychological and biological factors (Brown, Levy, Rosberger, & Edgar, 2003). Longitudinal designs can also examine changes in psychological outcomes after different bladder cancer treatment options. Experimental studies comparing different psycho-oncology interventions (e.g. pre-treatment psychoeducation, mindfulness) and assessing psychological outcomes in bladder cancer could also elicit findings that could inform the provision of psychological support in bladder cancer services. For instance,

some studies included in this review found that a combination of stress management and exercise was effective in improving depressive and anxiety symptomatology over the course of chemotherapy across different cancers of which bladder was one type (Jacobsen et al., 2013), whereas another study with bladder cancer patients only illustrated that preoperative psychoeducation significantly reduced anxiety in the third day post-surgery (Ali & Kalil, 1989).

Few studies included in this review had a representative sample, therefore limiting generalisation of the results to the wider population, which is a limitation of the current review.

Perhaps the most important limitation was that studies had such large variability of methodology, including design, sampling and questionnaires used, making the comparison of results challenging. Nevertheless, the contribution of this review is unique in initiating a better understanding of specific issues in bladder cancer. It is essential that in the future more research is carried out within bladder cancer specifically with a focus on psychological distress as main outcome measure. If assessing QoL the recommendation is to use specific measures for bladder cancer which have been validated or are at their latest stages of validation (Blazeby et al., 2014; EORTC, 2016) so results can capture a more realistic picture of the psychological consequences of bladder cancer due to the specificity of symptoms, treatments and differences in prognoses.

CONCLUSIONS

This literature review aimed to explore what factors contribute to psychological distress in bladder cancer patients aged 18 years and over. It included 26 articles spanning three decades, four continents, and including more than 14,000 participants and 27 types of cancers. There was a need to open the search strategy to studies that included all types of cancer, within which bladder cancer was specifically delineated and analysed, as limiting the search to articles on bladder cancer only would have reduced the capacity of the review. In addition, bladder cancer is rare in children as its incidence increases steadily with age, therefore this search included studies with adults aged 18 years and over only.

Results suggest that factors impacting psychological distress tend to fall into 8 categories (bladder cancer specific treatments, psychological factors and resource, socio-demographic factors, social support, cancer related factors, functional and cognitive impairment, physical health, and interventions). Although results can be, to some extent, comparable to other cancers, some specific bladder cancer outcomes were found with regards to changes in body image (reduced self-esteem) and sexual functioning. Survivors of bladder cancer will need constant routine surveillance and testing after surgery, for instance an external stoma may have been introduced after the removal of the bladder which will require constant care in cleaning it and emptying it. These have been identified as strong contributors to psychological distress and worsened QoL. Results from this review suggest that bladder cancer patients, which tend to be older in age, are not being well looked after with regards to their psychological needs. The field of psycho-oncology has come a long way in integrating psychological support in their routine care. However, bladder cancer

patients deserve to have better psychological support in all stages of their cancer pathway.

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VOLUME 1

2. EMPIRICAL PAPER:

The comparison of binge drinking in young females from two populations: The role of mental health and resilience.

Supervised by

Dr Hermine Graham

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ABSTRACT

Aims: To compare binge-drinking between a university student sample and community sample of young females.

Methods: A secondary-data analyses of two cross-sectional studies. A total of 409 participants aged 18-24 years old were included (161 community and 248 students). The primary hypothesis explored the differences between the populations with regards to socio-demographic factors and clinical variables stratified by drinking status, the secondary aims were to ascertain the relationship between resilience and mental health and their effect on hazardous drinking.

Results: The total prevalence of binge drinking was 56.2%. Students had a higher prevalence (59.7%) than the community sample (50.9%), but this difference was not statistically significant. However, the community sample was at a higher risk for hazardous drinking and had poorer mental well-being in comparison to the students. No differences were found with regards to resilience. Mental well-being was the factor contributing the most to the variance on hazardous drinking with resilience not playing any part.

Discussion: This is one of the few studies that focuses on elucidating binge drinking in young women and attempted to compare binge and hazardous drinking between a university student and community populations. Prevalence rates were similar to published rates for the UK. However, these high rates and the earlier age of onset of alcohol consumption pose a challenge to Public Health, in particular related to harmful effects on future reproductive health. In addition, this study suggests that mental well-being might be a strong predictor of hazardous drinking, regardless of resilience. Efforts to improve the mental well-being of children and adolescents is fundamental to avoid problem-drinking later in life.

INTRODUCTION

Binge Drinking

Historically the term binge drinking has been used to describe the consumption of high amounts of alcohol within an extended period of time (Berridge, Herring, & Thom, 2009; NHS Choices, 2016). More recently, binge drinking has also been used to describe a single drinking episode leading to intoxication, usually measured as the consumption of more units of alcohol than the recommended amount (Berridge et al., 2009). However, there is no consensus as to the amount of alcohol that needs to be consumed to be categorised as binge drinking, as per the latter definition, because unit measures vary according to the type and size of any drink, with age and sex also influencing how alcohol is processed in the body (Berridge et al., 2009). A recent report from the Department of Health (2016) highlights the confusion on weekly and daily guidelines and points out to existing evidence suggesting that the public, although understanding the concept of 'units' of alcohol, is still unclear about how to measure and count intake, generally thinking in terms of containers (e.g. how many pints of beer or glasses of wine were consumed (Department of Health, 2016; Office For National Statistics, 2010)).

There are different models of drinking according to countries and cultures, and hence the definition of binge drinking is likely to be influenced by local standards (Berridge et al., 2009). For instance, in the US binge drinking has been defined as 'drinking five drinks in a row for men and four for women' in about 2 hours (NIAAA, 2004). The argument from US researchers was that these numbers served as a threshold for alcohol-related social consequences (Siqueira, Smith, & Committee on

Substance Abuse, 2015; Wechsler & Nelson, 2001). The UK currently adopts the US definition for binge drinking. In Russia, binge drinking is categorised as drinking at least 25cl of vodka (80 g of alcohol or 10 drinks) in one go at least once a month (Bobak et al., 2016; Perlman, 2010).

Binge Drinking in Young Women

According to a report from the UK Institute of Alcohol Studies (IAS) (2013) younger people have different drinking habits than older adults. They tend to drink less often but are more likely to drink heavily, or binge, when they do drink (Institute of Alcohol Studies, 2013). Young women in the UK aged between 16 and 24 years old are amongst those with the highest age-specific proportion of heavy episodic or binge drinking (IAS, 2013). As a result, the number of alcohol-related hospital admissions for young women (aged 15-24 years old) increased by 76% from 2002 and 2010 and the number of alcohol-related death amongst women aged 15 and 34 years of age reached its highest point in 20 years in 2011.

In addition to the consequences of heavy/binge drinking described, other alcohol-related problems include poor school/university performance, anti-social behaviour, violence, increase criminal offences, and unplanned sexual activity (Berridge et al., 2009; Healey, Rahman, Faizal, & Kinderman, 2014; Roe & Ashe, 2008). The UK is reported to have one of the highest rates of young women who binge drink in Europe. According to a review on underage drinking, 54% of UK girls aged 15-16 years old drunk five or more drinks on the same occasion in 2011 whereas the average across 36 European countries was 38% (Healey et al., 2014).

Current changes in drinking patterns has seen young women shift to binge drinking habits in the recent years more than young men (Davoren, Demant, Shiely, & Perry, 2016). Young women are a particularly vulnerable group due to their biological differences to men which puts them in a higher risk to the harms associated with alcohol consumption (Babor, 2010). Factors such as body mass and metabolism will affect men and women differently in how alcohol is processed by their bodies - upon drinking equal amounts women have higher alcohol levels in their blood than men, and the immediate effects of alcohol occur more quickly and last longer in women than men (CDC, 2016). In addition, binge drinking in young women of child-bearing age may disrupt menstrual cycle, increase the risk of infertility, increase the chance of unprotected sex and multiple sex partners, and increase the numbers of unwanted pregnancies and sexually transmitted diseases (CDC, 2016).

Risk Factors for Binge Drinking

Research has suggested that some of the factors that may increase the risk for harm associated with alcohol are the presence of risk factors for certain diseases, low body weight, current health problems, and previous problems with alcohol (Department of Health, 2016). There is some evidence also suggesting that trends in binge drinking may vary by race or ethnicity, socioeconomic status, religion and sexual orientation (Donath et al., 2012; Siqueira et al., 2015). Peer pressure, history of childhood maltreatment, low resistance skills, personality characteristics, living arrangements and biological stages are other factors that have been listed as potentially increasing the risk for binge drinking in young people (Siqueira et al., 2015). In a cross-sectional study with adolescents in England, boredom was also

found to be a factor leading to risk-related drinking behaviour, a proxy for drinking over the guidelines (i.e. heavy drinking) (Bellis et al., 2010).

Research has also shown that geography (and culture) can play a role in influencing alcohol consumption. A World Health Organization (WHO) report suggested that the Europe Region is the heaviest drinking region in the world (WHO, 2014a), with Nordic countries and the UK and Ireland being identified as countries where consumption is at its highest levels (Anderson, 2007; Kuntsche, Rehm, & Gmel, 2004). A survey of students across seven universities in the UK showed that students enrolled in universities in the North of England had a significantly higher mean score on the Alcohol Use Disorders Identification Test (AUDIT) (a measure of hazardous alcohol use, dependence symptoms and harmful alcohol use) than those enrolled in universities in the Midlands and the South (Heather et al., 2011).

With regards to age, there is strong evidence suggesting that age of onset of alcohol consumption predicts alcohol-related problems later in life. As such, alcohol use trajectories have been largely studied with results suggesting high levels of alcohol use and misuse amongst people aged 18 to 29 years of age, of which university students represent a large proportion of this population. In addition, current research has also shown that while there is some evidence suggesting a shift in current trends of alcohol consumption by young people (slightly reducing), hazardous drinking continues to rise amongst university students in the UK (Heather et al., 2011). A recent review described concerning prevalence rates of 'hazardous' alcohol consumption in university students in the UK, with numbers ranging from 60.6% to 84% using the AUDIT as the main outcome measure and a cut-off point of 8 to

represent 'hazardous' drinking (Davoren et al., 2016). This same review also showed that patterns of alcohol consumption among males and females are converging, with young women reporting an increase in heavy drinking in the last two decades (Davoren et al., 2016; Davoren, Shiely, Byrne, & Perry, 2015). Considering that women are at a higher risk of developing alcohol-related problems due to their biological and genetic make-up, it can be suggested that the increase in heavy drinking in women imposes a serious challenge for public health (Alcohol and Public Policy Group, 2010; Babor, 2010).

Protective Factors Against Binge Drinking

Conversely, factors such as older age of onset of alcohol consumption, social support, informed and supportive parental guidance and religion have been thought to prevent hazardous alcohol consumption (Donath et al., 2012; Newbury-Birch et al., 2009). In a large representative survey of 9th grader students in Germany it was found that welfare status played a protective role against binge drinking (i.e. those whose families were receiving social welfare engaged less in binge drinking) (Donath et al., 2012). This is the opposite picture of a study carried out with 15-16 years old in England, where children with higher expendable income were more likely to report unsupervised heavy drinking (Bellis et al., 2010).

Resilience

The concept of resilience is grounded in the knowledge that people react differently to adverse experiences and on the evidence of a 'steeling' effect in which successful coping with stress/adversity may result in improved functioning and increased

resistance to stress/adversity (Masten et al., 1990; Rutter, 1985). Therefore, it has been suggested that resilience is interactive, not a fixed attribute (Rutter, 1985) and focus on individual differences in response to adversity (Rutter, 2012). Others defined resilience as 'the ability to succeed, to live and to develop in a positive and socially acceptable way, despite the stress or adversity that would normally involve the real possibility of a negative outcome' (Vanistendael, 1996 as cited in Cyrulnik, 2009, p.5). According to Rutter (2006) resilience is a 'reduced vulnerability to environmental risk experiences, the overcoming of a stress or adversity, or a relative good outcome despite risk experiences' (Rutter, 2006, p.2). Developmental psychologists have defined resilience as 'a dynamic process wherein individuals display positive adaptation despite experiences of significant adversity or trauma' (Luthar & Cicchetti, 2000, p.858).

Some studies have suggested that resilient children begin to use internal defence mechanisms at a very early age, these may include splitting (i.e., splitting the ego into a socially acceptable part and a more hidden side that expresses itself in roundabout and surprising ways), denial (i.e., to ignore a dangerous reality, or to make light of a painful wound), and intellectualization (i.e., to avoid confrontations in which we might become personally involved) (Cyrulnik, 2009). Studies with adolescents have pointed out that resilience is a process and that factors can be seen as either risk exposure or asset and resources (Fergus & Zimmerman, 2005). Fergus and Zimmerman (2005) described assets as positive factors that 'reside within the individual, such as competence, coping skills and self-efficacy (...) resources help youth overcome risks but are external, such as parental support, adult mentoring or community organisations' (Fergus & Zimmerman, 2005, p. 399).

Mental Health

The Interplay between Resilience and Mental Health

Research in resilience has produced some substantive findings in an attempt to understand this dynamic concept even though there is a lack of consensus in the definition of this construct. Some studies have identified the existence of a 'steeling' effect in resilience, and the suggestion that appropriate experiences in adult life can do much to counter balance the effects of earlier adversities (Bowes, Maughan, Caspi, Moffitt, & Arseneault, 2010; Masten et al., 2004; Sampson, Laub, & Wimer, 2006). Others have conceptualised resilience as existing in a continuum with vulnerability and indicates a resistance to psychopathology (Haddadi & Ali Besharat, 2010).

While it is out of the scope of this study to cover this research area in depth it is important to mention that one of its most relevant findings was that successful coping plays an important role in resilience and that coping with stress in a successful manner involves a 'complicated mixture of psychological habituation, changes in mental set, alteration in perceived and actual self-efficacy, hormonal changes and neural alterations' (Rutter, 2012, p.341).

The mental phenomena (i.e., ideas, attribution, self-reflection, planning) plays a crucial role in how one responds to stress and adversity (Rutter, 2012).

Constitutional variables such as temperament and personality, together with specific skills such as problem solving also play important roles (Campbell-Sills, Cohan, & Stein, 2006). Therefore, when thinking about resilience one must not forget the importance of psychological processes underlying the individual make up.

There is strong evidence in the scientific literature that supports the association between resilience and mental health (Davydov, Stewart, Ritchie, & Chaudieu, 2010; Marandure, 2015).

A review on resilience and mental health described three different resilience approaches in mental health research: the harm-reduction approach (mental resilience as quick and effective recovery after stress), the protection approach (mental resilience as protection mechanisms which helps to preserve health in the presence of adversity) and the promotion approach (resilience associated with the promotion of mental health) (Davydov et al., 2010). Studies have shown that positive psychological well-being act as a resilient barrier against later life adversity (Collishaw et al., 2007) and the occurrence of daily positive emotions act as moderators of stress reactivity and mediate stress recovery (Ong, Bergeman, Bisconti, & Wallace, 2006). Similar results have been found amongst the young population. In a US sample of college students, resilience moderated the relationship between childhood maltreatment and current psychiatric symptoms (Campbell-Sills et al., 2006). In another study with college students aged between 19 to 29 years old, resilience was positively associate with psychological well-being and negatively associated with psychological distress, depression and anxiety (Haddadi & Ali Besharat, 2010).

Therefore, mental health can be seen as a fundamental element of resilience which enables people to cope with adversities in their life and help them achieve their full potential (Friedli, 2009). Friedli (2009) describes mental health as a core element of health assets and that skills and attributes that constitute positive mental health

bestow protection to negative health outcomes (p. 23). Resilience can be seen operating in three different levels: environmental capital (community), social capital (community) and emotional and cognitive capital (individual). Emotional and cognitive capital act as resources that buffer stress and determine or contribute to individual resilience (Friedli, 2009).

Aims

The primary aim of this research study is to compare binge-drinking between a university student and community sample of young women.

The secondary aims of this research study are:

1. To explore the relationship between binge-drinking, resilience and mental health;
2. To assess whether resilience mediates the relationship between mental health and patterns of drinking

Hypotheses

1. There is a difference between university student and community samples in drinking status, with university students being more likely to be categorised as binge drinkers;
2. Participants with higher scores in the total resilience scale are more likely to have lower scores in the total GHQ scale, indicating better overall mental health and are less likely to be categorised as binge drinkers;
3. There is an interaction between resilience and mental health which will have an effect on drinking behaviour.

METHODS

Design

This is a secondary data analysis of two single-factors (binge drinkers and non-binge drinkers) between-participants cross sectional studies undertaken for partial fulfilment of the requirement for the degree of Bachelor of Science in 2013 and 2015. For the purpose of this paper both studies were combined and analysed as a two-factors (1. binge drinkers and non-binge drinkers and 2. community and student) between-participants cross sectional study. Self-reported questionnaires were administered to both samples via online survey systems.

Samples

A total of 409 participants aged between 18 and 24 years old formed the combined sample for this analysis. Participants were recruited using different methodologies as explained below.

Community Sample

Female participants who did not attend a university at the time of recruitment and were aged between 18 and 24 years old were invited to take part in an online survey through adverts posted in social media websites such as 'Facebook', 'Twitter' and 'Instagram'. A snowball sampling procedure was adopted where a link to the survey was posted in the websites alongside a message asking for those who met the criteria to take part. The message read: "Hi, if you are female, aged between 18-24 years of age and are not studying at university, I would really appreciate if you would take a few moments to fill out a quick online survey regarding alcohol use for my

third year dissertation research project at the University of Birmingham”. Three hundred and sixty females who met the inclusion criteria responded; one hundred and ninety-eight (198) failed to fully complete the survey and so their data was not used in the analysis. Therefore, a total of 162 participants (45%) were included in the study.

University Student Sample

A convenience sample of female undergraduate psychology students were recruited via the Research Participation Scheme from the University of Birmingham. In total 250 students out of 546 across all three years of study were recruited (45.8%). Students were aged between 18 and 24 years old and most were in the first year of study (49.2%). Participants received 0.3 course credits for their participation.

Ethical approval was obtained for both studies (Appendix 3). There was no need for a new ethical approval application to take place for this secondary data analysis as it is covered by the original permission. Informed consent was obtained and all participants were debriefed at the end of the questionnaire.

Outcome measures

The questionnaires comprised five sections: demographics, drinking behaviour, drug use, mental health and resilience (Appendix 4).

Section 1 - Demographic Information

Information on age, age of onset of alcohol consumption, marital status, living circumstances, and ethnicity was gathered. This section also contained a

discriminating item where participants who responded yes to the following question were categorised as binge drinkers: “Have you had two episodes or more where you have had four or more drinks in a row over the past two weeks?” There is a large variation in the definition of binge drinking. For instance, the National Health Service (NHS) defines binge drinking as “drinking lots of alcohol in a short space of time or drinking to get drunk” (NHS Choices, 2016), whereas the Office for National Statistics (ONS) defines it as “having over 8 units in a single session for men and over 6 units for women” (Office For National Statistics, 2013). The definition adopted in this study, having over 5 drinks in a single session for men and 4 drinks for women, has been proposed by the National Institute of Alcohol Abuse and Alcoholism (NIAAA) (NIAAA, 2004) and has been used in previous studies with young people (Adan, Navarro, & Forero, 2016; Bartoli et al., 2014; Tavoracci et al., 2016). Age of onset of binge drinking was also recorded as a continuous variable.

Section 2 – Drinking behaviour

The Alcohol Use Disorders Identification Test (AUDIT) was used to measure hazardous alcohol use, dependence symptoms and harmful alcohol use (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). The AUDIT was developed by the World Health Organization (WHO) and has been largely used in different settings and across different populations. It contains 10 questions where questions 1 to 8 are scored in a five-point scale (0 to 4) and questions 9 and 10 are scored on a three-point scale (0, 2 and 4). The maximum score is 40 with a cut-off point of 8 indicating hazardous drinking amongst those aged ≥ 18 (Babor et al., 2001). However, optimal cut-off points may vary according to gender and age (De Meneses-Gaya, Zuardi, Loureiro,

Alexandre, & Crippa, 2009). Demartini & Carey (2012) reported the AUDIT had a sensitivity of 0.79 and a specificity of 0.74 when a cut-off point of 7 was adopted amongst females in a student sample (18-25 years old) (Demartini & Carey, 2012).

Section 3 – Drug Use

An adapted shorter version of the Maudsley Addiction Profile (MAP) was used to investigate drug use (Marsden et al., 1998). Test-retest reliability was considered high ($r = 0.94$) (Marsden et al., 1998). The original MAP contains domains covering substance use, health risk behaviour, physical and psychological health, and personal/social functioning. Its substance use section records whether participants had used or not eight substances (alcohol, cannabis, heroin, methadone, benzodiazepines, cocaine powder, crack/rock/cocaine and amphetamines) in the past 30 days, the number of days used, the amount used on a typical day and the route of administration (e.g. oral, snort/sniff, smoke/chase). However, in the present study participants were asked to report only whether they have used any of the eight substances or not.

Section 4 – Mental Health

The General Health Questionnaire 28 items (GHQ-28) (Goldberg, 1978; Goldberg & Hillier, 1979) was used to measure psychological well-being and is divided into four domains/sub-scales: depression, anxiety, somatic symptoms and social withdrawal. Each sub-scale contains 7 items and a Likert scoring system is used with scores for each item ranging from 0 to 3. Individual scores were calculated for the sub-scales as well as for the global score. Total scores range from 0 to 84, higher scores indicate poorer mental health. A cut-off point of 23/24 indicate those likely to

be at a higher risk to develop psychiatric disorders. Reliability coefficients have ranged from 0.78 to 0.95 in various studies (Jackson, 2006) and high internal consistency has also been reported (Failde, Ramos, & Fernandez-Palacín, 2000). The GHQ has been extensively used in the general population and several studies have used it in student samples (Gibbons et al., 2004; Javanmard & Mamaghani, 2013; Macaskill, 2013)

Section 5 – Resilience

Protective resilience factors were assessed through the Resilience Scale for Adults (RSA) (Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005; Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003). The RSA includes 33 items covering six dimensions: perception of self, planned future, social competence, structured style, family cohesion and social resources. Each question is answered using a five-point Likert scale with a score from 0 to 4. Total scores can range from 0 to 132 with higher scores indicating higher levels of protective resilience factors. Reliability has been acceptable, validity also achieved satisfactory results (alphas varying from 0.70 to 0.87) in the absence of a gold standard (Baltaci & Karata, 2014; Friborg et al., 2005, 2003; Hjemdal et al., 2011; Windle, Bennett, & Noyes, 2011; Windle et al., 2011). The RSA has also proved to be a cross-cultural reliable and valid measure (Hjemdal et al., 2011; Hjemdal, Roazzi, Dias, & Friborg, 2015).

Statistical Analysis

All statistical analyses were carried out using SPSS version 23 (IBM Corp., 2014). Descriptive statistics were calculated and reported as means, medians and percentages.

The main dependent variable (outcome) was drinking status as defined by a positive answer to the question “have you had two episodes or more where you have had four or more drinks in a row over the past two weeks?” Analysis was at first stratified by drinking status (binge drinkers (BD) vs non-binge drinkers (NBD)) and later by drinking status and population (university vs community).

The Chi-Square test for independence was used to test whether there was any relationship between drinking status and demographic variables such as ethnicity, marital status and living arrangements. It is important to highlight here that analyses for ethnicity, marital status and living circumstances were stratified only by drinking status. A further layer of stratification (i.e. by population) was not tested as it would produce too many cells with zeros or small numbers thus compromising the validity of the tests. The *T*-Test was used to measure the association between age (continuous variable) and drinking status. The same analysis was later carried out comparing the student and the community samples.

To measure the relationship, or, in other words, whether there were any differences between drinking status and the clinical measures, the non-parametric Mann-Whitney U Test was used after an inspection of the distribution of all clinical predictor (independent) variables showed a non-parametric distribution. This is a common phenomenon in social sciences when measuring alcohol misuse, mental health and resilience as the majority of the population tends not to drink hazardously, tends to have a good mental health and high levels of resilience protective factors. The same analysis was then carried out stratified by population status.

Hypothesis 1

A chi-square test of independence was later used to measure if there was any association between drinking status and population status to address the hypothesis that there would be a difference between university students and the community sample in terms of drinking status, with students being more likely to be categorised as binge drinkers.

A set of pairwise analysis was carried out to measure any difference between community BD vs community NBD, student BD vs student NBD, community BD vs student BD, and community NBD vs student NBD. Chi-square or *T*-tests statistics were applied according to the nature of the variable under investigation.

Hypothesis 2

Pearson's correlation coefficients were used to measure the correlation between the clinical variables, and particularly the association between resilience and mental health as per the a priori hypothesis that participants with higher scores in the total resilience scale are more likely to have lower scores in the total GHQ scale, indicating better overall mental health.

Hypothesis 3

To test whether there was an interaction between resilience and mental health a hierarchical two sets of multiple regression analysis were carried out. In the first set the regression analysis tested for the potential predictors of drinking behaviour as measured by the AUDIT after taking into account clinical (predictors) and demographic variables. The regression model included AUDIT total scores as main

outcome and age, population, marital status and ethnicity as covariates. The second model included, in addition to the first one, mental well-being. The third and final model included, in addition to models 1 and 2, resilience. This study adopted an $\alpha = .05$. Multicollinearity was checked beforehand with bivariate, zero-order correlations of about .80 or larger needed to be present to be considered as violating this assumption (Laerd Statistics, 2016; Montgomery, Peck, & Vining, 2001). The second set of regression analysis repeated the same procedure described above but included a fourth and final model which included the interaction term created for resilience and mental health, in addition to models 1, 2, and 3.

Other Hypotheses

A two-way Multivariate Analyses of Variance (MANOVA) was used to test the mean differences between groups in GHQ-28 and RSA sub-scales. For the purpose of this analyses population and drinking status were used as fixed factors (independent variables) and mental well-being and resilience sub-scales were used as dependent variables. MANOVA will also inform whether there was any interaction between population and drinking status.

RESULTS

Demographic Characteristics

In total, 409 participants were included in the present study (students = 248 and community = 161). All participants were female and aged between 18 and 24 years old ($M = 19.67$, $SD = 1.53$). Most participants were White British (86.5%), single (72.9%) and many lived with their parents (46.8%). The majority of the sample were categorised as binge drinkers ($n = 230$, 56.2%) while 43.8% were non-binge drinkers. Table 1 shows the breakdown of demographic and clinical variables stratified by population. Across both samples there were more participants categorised as binge-drinkers (BD) than non-binge drinkers (NBD) with 50.9% of the community sample ($n = 82$) and 59.7% of the student sample ($n = 148$) in the BD category respectively.

Table 1. Demographic and clinical variables by population

	Population		
	Community (n = 161)	Student (n = 248)	Total (n = 409)
Age (mean, SD)	20.70 (1.69)	19.00 (0.96)	19.67 (1.54)
Age of onset drinking (mean, SD)	15.55 (1.56)	14.43 (1.77)	14.88 (1.77)
Binge Drinking Status (n, %)			
No	79 (49.1%)	100 (40.3%)	179 (43.8%)
Yes	82 (50.9%)	148 (59.7%)	230 (56.2%)
Ethnicity (n, %)			
White/White British	141 (88.7%)	211 (85.1%)	352 (86.1%)
Asian/Asian British	8 (5.0%)	22 (8.9%)	30 (7.3%)
Black/Caribbean/African	2 (1.3%)	15 (6.0%)	17 (4.2%)
Other	8 (5.0%)	-	8 (2.0%)
MV* = 2			
Living Status (n, %)			
With parents	81 (52.6%)	107 (43.1%)	188 (46.0%)
With partner	14 (9.1%)	5 (2.0%)	19 (4.6%)
Shared accommodation	11 (7.1%)	136 (54.8%)	147 (35.9%)
Alone	20 (13.0%)	-	20 (4.9%)
Other	28 (18.2%)	-	28 (6.8%)
MV = 7			
Marital Status (n, %)			
Single	135 (83.9%)	163 (65.7%)	298 (72.9%)
In a relationship	23 (14.3%)	75 (30.2%)	98 (24.0%)
Married/Civil Partnership	1 (0.6%)	3 (1.2%)	4 (1.0%)
Declined to answer	-	7 (2.8%)	7 (1.7%)
Other	2 (1.2%)	-	2 (0.5%)
AUDIT scores (mean, SD)	19.73 (6.93)	8.16 (4.69)	12.81 (8.03)
GHQ Total Score	50.16 (13.95)	20.68 (7.56)	32.58 (17.94)
Resilience Total Score	94.64 (6.38)	94.94 (17.77)	94.83 (14.39)
MAP Total	1.24 (1.14)	1.01 (0.43)	1.10 (0.79)

* MV = missing values, if not reported MV = 0

Table 2 shows the information on demographic variables stratified by drinking status and population. There was no significant difference in the mean age of NBD and BD community participants ($t(159) = 0.89, p = .37$). However, the mean age of NBD and BD student participants did show a significant difference ($t(167.43) = 2.51, p = .01$), with student binge-drinkers being slightly younger ($M = 18.87, SD = 0.81$) than their non-binge drinkers counterparts ($M = 19.20, SD = 1.12$). There was also a difference between community binge-drinkers and student binge-drinkers ($t(103.78) = 8.95, p = .00$), with the community sample being slightly older ($M = 20.59, SD = 1.62$) than the students. In terms of age of onset of alcohol consumption, there was a statistically significant difference between community NBD and BD ($t(158) = 4.15, p = .00$), with the binge drinkers starting consuming alcohol at a younger age. No such difference was found between the student sample. However, there was a significant difference in the mean age of onset of alcohol consumption between the community BD and the student BD ($t(225) = 3.47, p = .001$), with the student sample having a slightly younger age of onset ($M = 14.30, SD = 1.66$) in comparison to the community sample ($M = 15.07, SD = 1.53$). No difference between any group was found with regards to age of onset of binge drinking.

Table 2. Demographics characteristics by population and binge drinking status

	Population			
	Community BD n = 80 (49.4%)	Community BD n = 82 (50.6%)	Student NBD n = 102 (40.8%)	Student BD n = 148 (59.2%)
Age (mean, SD)*	20.82 (1.76)	20.59 (1.63) ^b	19.20 (1.12) ^a	18.87 (0.81) ^a
Age onset drinking*	16.05 (1.45) ^c	15.07 (1.53) ^c	14.64 (1.92) ^d	14.30 (1.66)
Ethnicity*				
White/White British**	68 (86.1%)	74 (91.4%)	76 (74.5%)	136 (91.9%)
Asian/Asian British	5 (6.3%)	3 (3.7%)	11 (10.8%)	11 (7.4%)
Black/Caribbean/African	0	2 (2.5%)	15 (14.7%)	1 (0.7%)
Other	6 (7.6%)	2 (2.5%)	-	-
Living Status				
With parents	43 (55.1%)	38 (49.4%)	44 (43.1%)	64 (43.2%)
With partner	9 (11.5%)	6 (7.8%)	3 (2.9%)	2 (1.4%)
Shared accommodation	5 (6.4%)	6 (7.8%)	54 (52.9%)	82 (55.4%)
Alone	9 (11.5%)	11 (14.3%)	-	-
Other	12 (15.4%)	16 (20.8%)	1 (1.0%)	-
Marital Status				
Single	63 (78.8%)	73 (89.0%)	44 (43.1%)	98 (66.2%)
In a relationship	15 (18.8%)	8 (9.8%)	3 (2.9%)	48 (32.4%)
Married/Civil partnership	1 (1.3%)	-	54 (52.9%)	1 (0.7%)
Declined to answer	-	-	-	1 (0.7%)
Other	1 (1.3%)	1 (1.2%)	1 (1.0%)	-

* Statistically significant difference ($p \geq .05$)

^a Student BD different from students NBD ^b Community BD different from students BD ^c Community BD different from community NBD ^d Student BD different from community BD

** More White British as BD and this was significantly different

Fisher's Exact coefficients were calculated instead of Chi-Square statistics where necessary (when there were violations of assumptions) to measure the difference between categorical independent variables and drinking status. Results suggested a strong relationship between drinking status and ethnicity ($p < 0.01$) with the White British participants accounting for the highest prevalence of binge drinking (59.3%). Cross-tabulations showed no statistically significant relationships between drinking status and marital status, and drinking status and living arrangements.

Clinical Characteristics

Table 1 contains information about the clinical characteristics, including mean total scores for the AUDIT (hazardous drinking), the MAP (drug use), GHQ sub-scales and total score, and resilience total score according to the population. Table 3 and Figures 1,2, and 3 contain the same information but now stratified by drinking status and population. Results suggested that the community sample had higher risk of hazardous drinking ($M = 19.73$, $SD = 6.93$) than their student sample counterparts ($M = 8.16$, $SD = 4.67$) (Table 1). The general cut-off point for hazardous drinking is 8, therefore in this study both samples would be categorised as hazardous drinkers with the community sample being at a higher risk of developing problems related to alcohol. Table 3 and Figure 1 shows that, regardless of drinking status, the community sample remained at a higher risk of hazardous drinking, with the community BD having the highest mean scores in the AUDIT across the groups ($M = 23.24$, $SD = 6.89$) and the student NBD having the lowest mean scores ($M = 5.93$, $SD = 4.77$) making this group as the only one not meeting the criteria for hazardous drinking. Cronbach's alpha for the AUDIT in this study was 0.91 showing a high internal consistency.

Table 3. Clinical characteristics by population and binge drinking status

Clinical Variables (mean, SD)	Population			
	Community NBD	Community BD	Student NBD	Student BD
Total AUDIT scores	16.09 (4.76)	23.24 (6.89)	5.93 (4.77)	9.76 (3.89)
GHQ Depression	9.44 (4.48)	10.60 (5.17)	1.98 (3.43)	1.72 (2.71)
GHQ Social Dysfunction	13.44 (1.93)	15.06 (3.75)	7.38 (2.47)	7.24 (2.34)
GHQ Anxiety	12.40 (3.84)	14.24 (5.71)	6.59 (4.44)	6.14 (4.00)
GHQ Somatic Symptoms	11.70 (3.26)	13.27 (4.03)	5.57 (2.94)	7.01 (3.27)
GHQ Total	47.05 (10.44)	53.17 (16.15)	19.85 (7.39)	21.24 (7.64)
Resilience Total	94.62 (6.74)	94.67 (6.06)	94.15 (17.39)	95.48 (18.07)
MAP Total	0.95 (0.68)	1.51 (1.41)	0.85 (0.41)	1.11 (0.41)

Results shows that in this study total GHQ-28 scores were remarkably different between community and students with the former reaching the threshold (23/24) to be considered at higher risk of developing mental health problems ($M = 50.17$, $SD = 13.95$) and the latter be considered lower risk ($M = 20.68$, $SD = 7.56$) (Table 1). Table 3 and Figure 2 shows that the community sample remained with the highest mean scores for the GHQ-28 regardless of drinking status thus suggesting a poorer mental well-being, with the community BD having the highest mean across the groups ($M = 53.17$, $SD = 16.15$) and the student NBD having the lowest score ($M = 19.85$, $SD = 7.39$). Cronbach's alpha for the GHQ-28 in this sample was 0.97.

In terms of resilience, scores were similar between both samples. Higher scores indicate higher levels of resilience, with community having a mean score of 94.64 ($SD = 6.38$) and the student sample having a mean score of 94.94 ($SD = 17.77$) (Table 1). A similar pattern of results was found when the sample was further stratified by drinking status. Surprisingly the group with the highest resilience score was student BD ($M = 95.48$, $SD = 18.07$) and the one with the lowest score was student NBD ($M = 94.15$, $SD = 17.39$) (Table 3 and Figure 3). Cronbach's alpha for the 33-items resilience scale (RSA) was 0.81 in this study.

The community sample consumed slightly more substances in the past month than their student counterparts ($M = 1.24$, $SD = 1.41$ and $M = 1.01$, $SD = 0.43$ respectively) (Table 1). A similar pattern happened when the samples were further stratified by drinking status with the community BD having the higher consumption ($M = 1.51$, $M = 1.41$) and the student NBD the lowest ($M = 0.85$, $SD = 0.41$).

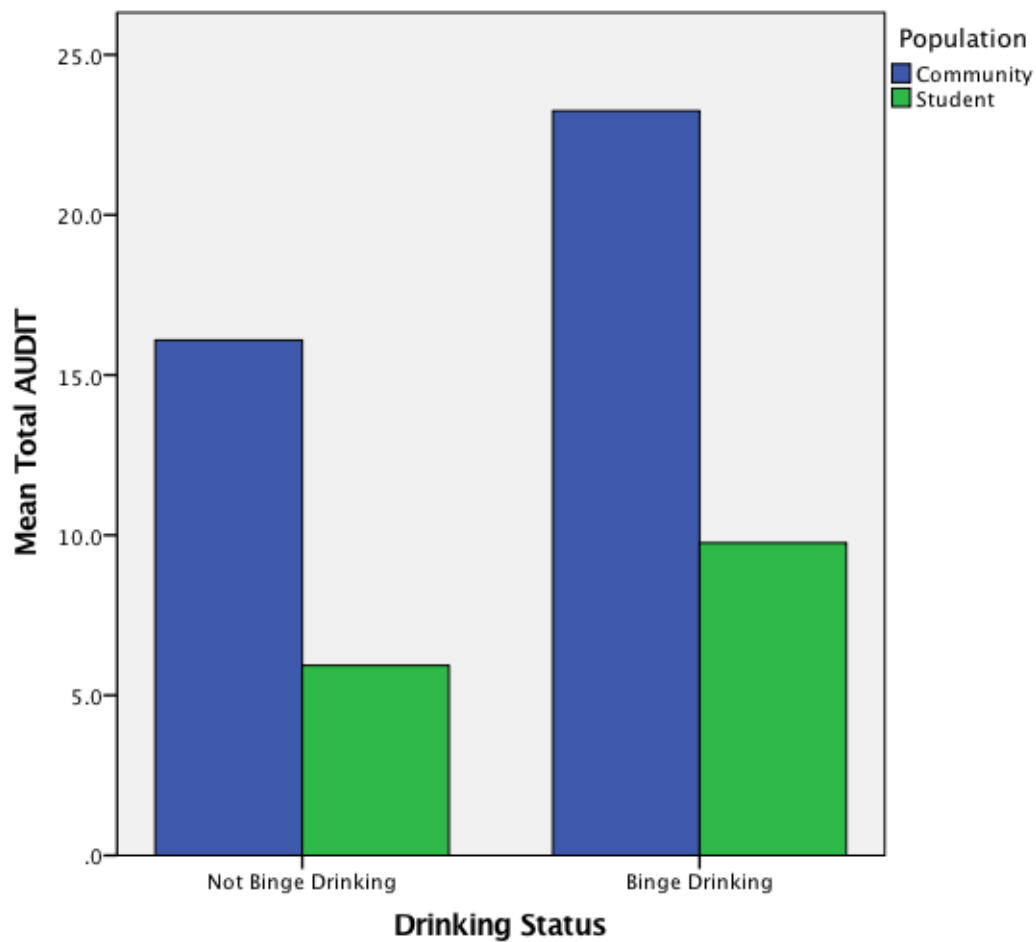


Figure 1. Mean AUDIT scores of binge drinkers and non-binge drinkers by population

Due to the non-normal distribution of all clinical variables, the Mann-Whitney U test was carried out to test the differences between rank means of clinical variables by sample. With the exception of resilience, all other scores were higher in the community sample and were statistically significantly different from the student sample suggesting that the community sample is at higher risk of hazardous drinking behaviour ($U = 2583$, $z = -14.72$, $p = .00$, $r = -.73$) and mental health problems ($U = 280$, $z = -16.71$, $p = .00$, $r = -.84$)⁴². As expected, those categorised as BD had higher mean scores in the AUDIT (M rank = 226.48) compared to their NBD counterparts

⁴² The MAP scores were not used in the inferential statistical analyses

(M rank = 169.39). This difference was significant ($U = 14211$, $z = -4.908$, $p = .000$), thus suggesting that those who are BD are also at risk for hazardous drinking. No difference was found between drinking status and the remaining clinical variables.

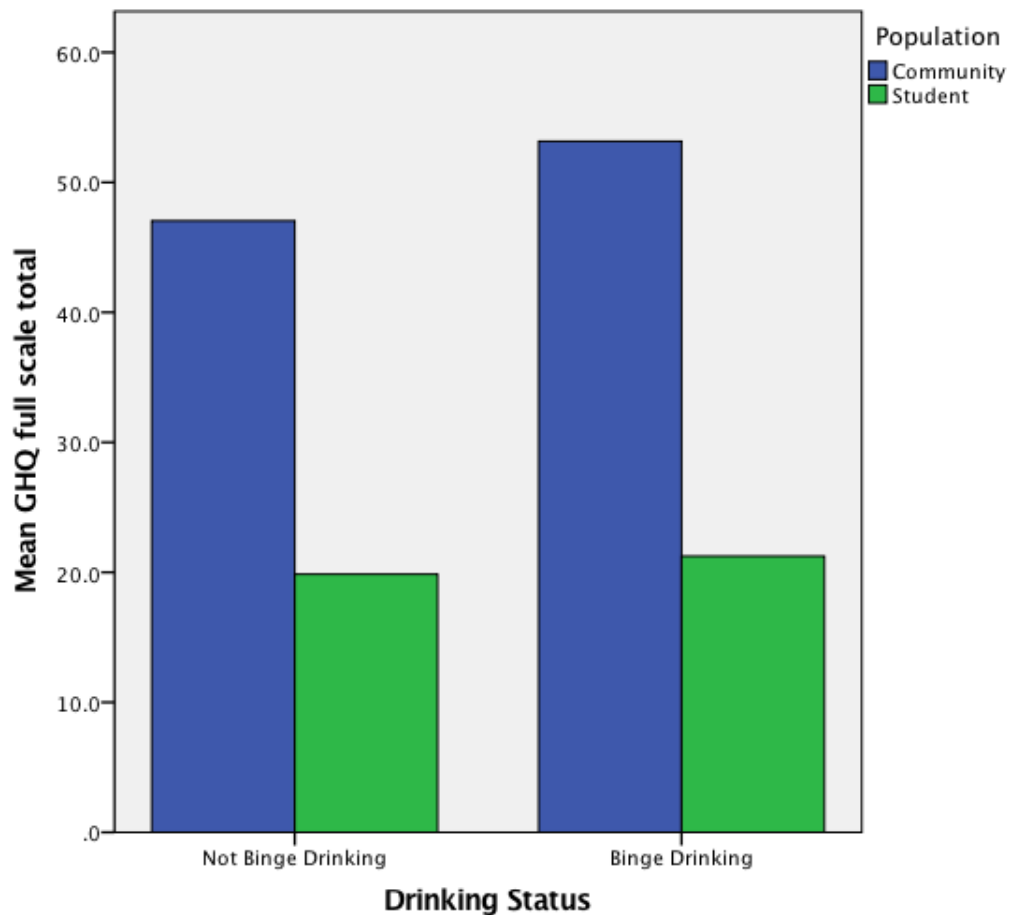


Figure 2. Mean GHQ-28 scores of binge drinker and non-binge drinkers by population

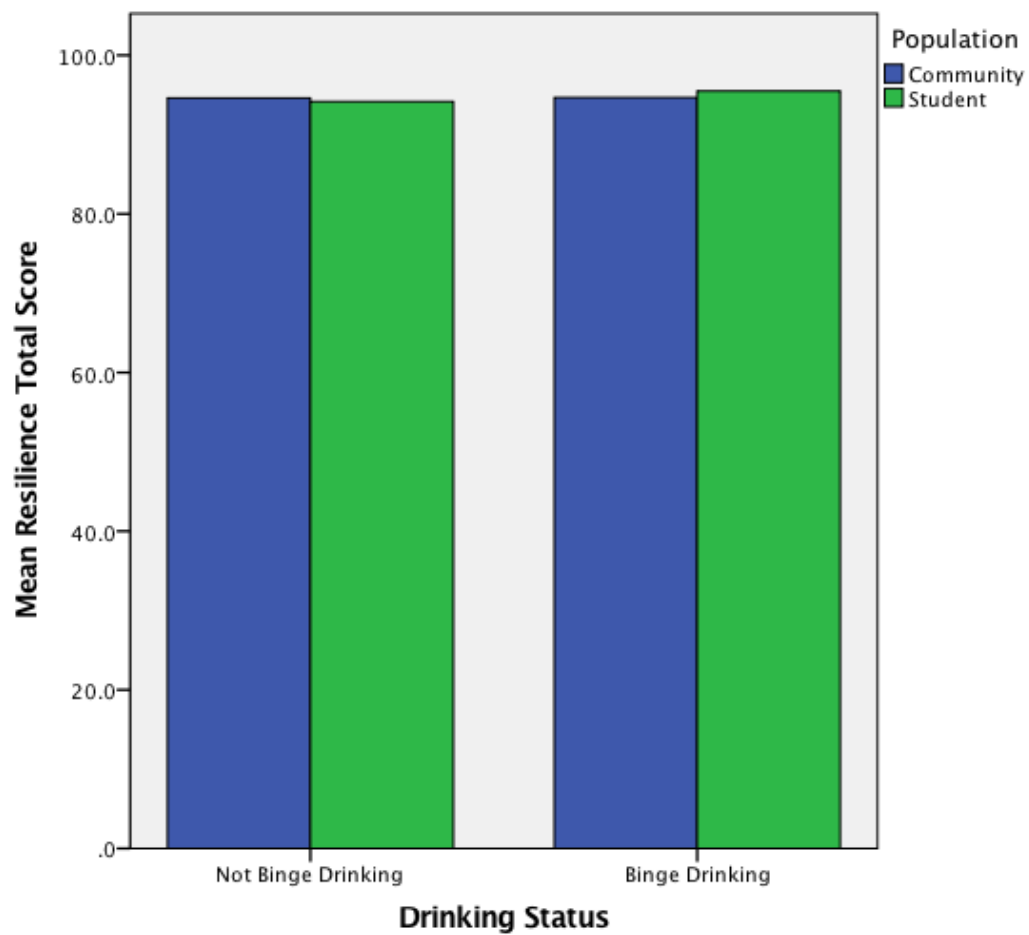


Figure 3. Mean Resilience Total scores of binge drinker and non-binge drinkers by population

Hypotheses-Driven Tests

Hypothesis 1: Prevalence of Binge Drinking

A Chi-square test for independence (with Yates Continuity Correction) was used to calculate the difference in drinking status between the samples. Results indicated a non-significant association, $\chi^2 (1, n = 409) = 2.69, p = .11, \phi = .08$). Therefore, the first hypothesis tested in this study was rejected: although reporting the highest presence of binge drinking, students were not statistically more likely to be categorised as binge drinkers than their community counterparts.

Hypothesis 2: Mental Health and Resilience

Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. Hence, the relationship between perceived mental well-being (as measured by the GHQ) and resilience (as measured by the RSA) was investigated using the non-parametric equivalent to Pearson's correlation, Spearman's rho rank-order correlation coefficient. There was a small, negative correlation between the two variables, $r_s = -.26, n = 399, p < .005$, with higher levels of resilience associated with lower GHQ scores (i.e. lower psychological distress) – the more resilience people have, the less psychological distress they experience. Although the association is weak according to Cohen's guidelines (Cohen, 1988) the second hypothesis tested has been confirmed: participants with higher scores in the total resilience scale were statistically more likely to have lower scores in the total GHQ scale, indicating better overall mental health and less likely to be categorised as binge drinkers

When this same analysis was stratified by the population no correlation between resilience and mental health was seen in the community sample. However, in the university student sample there was a statistically significant medium strength, negative correlation between resilience and mental health ($r_s = -.43$, $n = 238$, $p < .005$).

Spearman's correlation coefficients were also calculated to investigate the association between resilience and hazardous drinking (as measured by the AUDIT). Results also indicated a small, negative association between these two variables, $r_s = -.12$, $n = 401$, $p < .05$, with higher levels of resilience associated with lower levels of hazardous drinking. Once again, albeit weak, the association was significant and the hypothesis tested can be accepted. This correlation was not maintained when the analysis was stratified by population.

Hypothesis 3: Predictors of Drinking Behaviour and the Interaction between Resilience and Mental Health

Prior to carrying out the hierarchical regression analyses, the relevant assumptions of this type of analyses were tested. Firstly, the dependent variable was continuous (AUDIT scores). Secondly, the independent variables were a mixture of categorical and continuous variables (total of five). Thirdly, a sample size of 409 was considered adequate as it would allow a large proportion of cases in each of the five independent variables to be included in the analysis (Tabachnick & Fidell, 2001).

The assumptions of multicollinearity and singularity were also met. An examination of correlations (see Table in Appendix 5) revealed that no independent variables were highly correlated, with the exception of Population and GHQ-28 total scores.

However, as the collinearity statistics (i.e., Tolerance and VIF⁴³) were all within accepted limits, the assumption of multicollinearity was considered to be met and the variables remained in the model (Coakes, 2005; Hair, Anderson, Tatham, & Black, 1998). An examination of the Mahalanobis distance scores indicated no multivariate outliers. Residual and scatter plots indicated the assumptions of normality, linearity and homoscedasticity were all satisfied (Hair et al., 1998; Pallant, 2001).

Hierarchical multiple regression analysis was carried out to test for the potential effects of resilience and mental health on drinking behaviour after controlling for socio-demographic variables including age, marital status, ethnicity and population, (i.e. is resilience or mental health able to predict a significant amount of the variance in hazardous drinking?). Table 4 shows the results of the models tested in the regression analysis. Age, population, marital status and ethnicity were entered as Step 1, explaining 52.9% of the variance in hazardous drinking. After entry of mental well-being (as measured by the GHQ total scores) at Step 2 the total variance explained by the model as a whole was 61.8%. Finally, resilience was entered as Step 3 and did not change the variance explained by Step 2 (61.8%, $F(6, 384) = 103.46, p < .005$). Mental health explained an additional 8.9% of the variance in hazardous drinking, while resilience did not have any effect, after controlling for socio-demographic factors and population status, $R^2 \text{ change} = .62, F \text{ change}(1,385) = 89.42, p < .005$. In the final model population, marital status, ethnicity and mental health made a statistically significant contribution, with mental health recording a higher beta value (beta = .51, $p < .005$) than population (beta = -.28, $p < .005$), ethnicity (beta = -.15, $p < .005$) and marital status (beta = -.09, $p < .005$).

⁴³ Variance Inflation Factor

Table 4. Hierarchical regression analysis (AUDIT total scores as outcome)

	<i>R</i> ²	<i>R</i> ² change	<i>F</i> change	<i>p</i>	<i>β</i>	<i>p</i>
Step 1	.529	.529	108.332	.000		
Age					-.007	.869
Population					-.702	.000
Marital Status					-.094	.008
Ethnicity					-.137	.000
Step 2	.618	.089	89.417	.000		
Age					-.003	.939
Population					-.292	.000
Marital Status					-.097	.003
Ethnicity					-.148	.000
Mental Health					.505	.000
Step 3	.618	.000	.132	.000		
Age					-.003	.936
Population					-.288	.000
Marital Status					-.097	.003
Ethnicity					-.147	.000
Mental Health					.511	.000
Resilience					.012	.716

A hierarchical regression analysis was carried out with the inclusion of an interaction term created to represent the a priori hypothesis that there is an interaction between mental health (GHQ-28) and resilience (RSA). When this interaction term was included in the model as Step 4, in addition to the steps described above, the final model explained only 6.1% of the variance on hazardous drinking but it was not a statistically significant model ($F(1,128) = 1.388, p = .224$) and the interaction term explained only an additional 0.8% of the variance in hazardous drinking. Although GHQ-28 total scores remained as the strongest contributor to explaining hazardous drinking (beta = .56), this contribution was not statistically significant ($p = .205$).

Therefore, the third hypothesis in the study was rejected: resilience was not shown to have a statistically significant impact in the association between mental health and hazardous drinking.

Secondary hypotheses

Further analyses were carried out with the sub-scales of the mental health and resilience measures. Firstly, to analyse differences between participants' scores on the sub-scales of the GHQ-28, a two-way MANOVA was conducted. The same procedure was carried out to analyse differences between participants' scores on the sub-scales of the RSA. Although this test is normally used for parametric data it is a robust test and the large sample size of this study support its use (Bray & Maxwell, 1985).

Mental Health

The Box's M value of 127.25 was statistically significant ($p = .000$) suggesting that there was a violation of the assumption of homogeneity of variance-covariance matrices. However, Tabachnick & Fidell (2001) warned about the strictness of this test in large sample size studies. Furthermore, the model showed high observed power. The Levene's test of quality of error variances showed that each of the GHQ-28 sub-scales violated the assumption of equality of variance ($p > .05$). From this, a more conservative alpha level for determining significance of the univariate F test was set (alpha of .01) (Pallant, 2001; Tabachnick & Fidell, 2001).

Results from the two-way MANOVA suggested that there was a statistically significant effect of population $F(4, 402) = 200.653$, $p = .000$, Wilks' $\Lambda = .334$, and

drinking status $F(4, 402) = 6.240, p = .000$, Wilks' $\Lambda = .942$ in all the GHQ-28 sub-scales (i.e., overall mental health). There was also significant interaction effect between population and drinking status in all GHQ-28 sub-scales, $F(4, 402) = 3.773, p = .005$, Wilks' $\Lambda = .964$. Since there was a significant multivariate effect for each factor (independent variables (IV) and interaction), further investigations were carried for each of the dependent variables (DV) (GHQ-28 sub-scales) in turn to assess if the two IVs had a significant impact on them separately.

Results showed that there was a statistically significant effect of population (whether student or community) in all of the GHQ-28 sub-scales (all four variables had $p = .000$). The effect of being categorised as BD or NBD was only significant for social dysfunction ($F(1, 405) = 7.891, p = .005$) and somatic symptoms ($F(1, 405) = 19.350, p = .000$) sub-scales. The interaction between population and drinking status also showed a significant effect on the social dysfunction sub-scale ($F(1, 405) = 9.964, p = .002$). Inspection of the mean scores indicated that the community sample had significant higher scores in each of the GHQ-28 sub-scales in comparison to the student sample, thus suggesting a poorer mental well-being. Those categorised as binge drinkers reported slightly higher scores in each of the sub-scales again suggesting poorer mental well-being (but significance was only achieved for the social dysfunction and somatic sub-scales). For the interaction between population and drinking status community BD tended to score slightly higher in each sub-scale than their NBD counterparts and significantly higher than students BD, but significance was only achieved in the social dysfunction sub-scale.

Resilience

The Box's M test was also significant for the analysis with the sub-scales of the resilience scale (486.903, $p = .000$). The Levene's test also resulted in significance for each of the sub-scales, therefore a more stringent alpha value for the F test significance was used ($\alpha = .01$).

Results from the two-way MANOVA suggested that there was a statistically significant effect of population $F(6, 400) = 69.588$, $p = .000$, Wilks' $\Lambda = .489$ in all the RSA sub-scales (i.e., overall resilience). There was no statistically significant effect of drinking status nor of the interaction between population and drinking status upon the resilience sub-scales. A significant multivariate effect was only found for the population variable therefore further investigations were carried for each of the resilience sub-scales in turn to assess if population had a significant impact on them separately.

There was a statistically significant effect of the population in 4 out of 6 resilience sub-scales, namely: the social resources sub-scale ($F(1, 405) = 193.67$, $p = .000$), structured style sub-scale ($F(1, 405) = 8.666$, $p = .003$), perception of future ($F(1, 405) = 15.493$, $p = .000$), and perception of self ($F(1, 405) = 49.783$, $p = .000$).

Inspection of the means scores indicated that participants from the student sample scored significantly higher in the social resources sub-scale ($M = 24.15$, $SE = 0.22$) in comparison to their community counterparts ($M = 19.22$, $SE = 0.27$). However, participants from the community sample scored slightly higher in the structured style ($M = 11.77$, $SE = 0.24$), perception of the future ($M = 11.64$, $SE = 0.24$) and

perception of self ($M = 17.22$, $SE = 0.31$) sub-scales thus suggesting slightly better resilience in these areas.

DISCUSSION

Results from this unique data analysis of young women from two different samples, community and university graduate students, indicated a high prevalence of binge drinking and a young age of onset of alcohol consumption. Results also suggested that although students had a higher prevalence of binge drinking than the community sample, the latter were at a higher risk for hazardous drinking and presented with poorer mental health. Mental health was the factor which had the strongest effect on hazardous drinking whereas resilience, or the interaction between resilience and mental health, had no significant effects on drinking behaviour.

The overall 2-weeks prevalence of binge drinking in the current study was 56.2%, which is comparable to other studies in the UK (Bellis et al., 2010; Hibell et al., 2011). Few studies have compared students and their community peers, and these studies were carried out in the USA (Blanco et al., 2008; Kypri, Cronin, & Wright, 2005; Slutske et al., 2004, 2005).

The high prevalence in this study also further supports current evidence that the UK is a country with one of the highest prevalence of binge drinking amongst Western countries (Hibell et al., 2011). In Healey and colleagues' review (2014) the prevalence of binge drinking in girls aged 15-16 years old was 54%, the authors then discussed potential underlying factors for such high prevalence (Healey et al., 2014). A lower prevalence rate of binge drinking was found in the US for girls aged between 18-20 years old (30.1%) and 38.6% for those aged 21-23 years old (Grucza, Norberg, & Bierut, 2009). The European School Survey Project on Alcohol and Other Drugs

(ESPAD) showed the aggregated-level average of heavy drinking in girls across 36 countries was 38% in 2011, with girls from Denmark having the highest prevalence (56%) and those from Iceland the lowest (13%) (Hibell et al., 2011). This same pattern of heavy drinking was repeated in the most recent ESPAD survey (Kraus et al., 2015) which did not include the UK.

Some significant differences between students and community samples of young women were identified in the current study. Firstly, the student sample had a higher prevalence of binge drinking (59.7%) than their community counterparts (50.9%). Studies involving only university or college students' samples showed similar rates for BD (Davoren et al., 2016; Donath et al., 2012; Hibell et al., 2011; Kraus et al., 2015; D. E. Pedersen, 2013). US studies comparing college students and their non-college peers aged 19-21 years old also found higher rates of binge drinking amongst students (Slutske, 2005; Slutske et al., 2004). Secondly, students who binge drink were significantly younger than their community counterparts and started drinking alcohol at a significantly younger age than the community BD group. US studies comparing college and non-college students did not include age of onset in their analyses. However, studies that included students aged 15 years and over have also found a high prevalence of BD thus suggesting early onset of consumption of alcohol (Bellis et al., 2010; Healey et al., 2014). Thirdly, the current study found that those who identified themselves as 'White British' had the largest prevalence of binge drinkers in comparison to other ethnicities (59.3%). Other studies have also showed a higher prevalence of binge drinking amongst white participants (Courtney & Polich, 2009; Heather et al., 2011; D. E. Pedersen, 2013; Siqueira et al., 2015). However, no other associations were found between binge drinking and marital

status or living circumstances. This is in contrast to the findings of some other studies that suggest that those who are married are less likely to engage in heavy drinking behaviour (Courtney & Polich, 2009; NIAAA, 2006) as well those who live off campus and with family (Bartoli et al., 2014; Heather et al., 2011). Although students had a higher prevalence of binge drinking in the current study in comparison to the community sample this difference was not statistically significant and therefore the first hypothesis was rejected.

The results from clinical variables measured in this study, namely hazardous drinking (measured by the AUDIT), substance use (measured by the MAP), mental well-being (measured by the GHQ-28), and resilience (measured by the RSA), showed that although students had the largest proportion of BD of the two populations they were also the group who reported better mental well-being, were more resilient, consumed less drugs and, engaged in less hazardous drinking than their community peers (all these differences were significant with the exception of resilience and substance abuse with the latter not being analysed). Community total AUDIT mean scores was 19.73 (SD=6.93) while in students was 8.16 (SD=4.69). A study carried out with university students across 7 different UK universities found similar rates in women ($M=9.3$, $SD=6.8$) (Heather et al., 2011).

A finding of interest was that, although students engaged in more binge drinking than the community sample, they were borderline in meeting the criteria for hazardous drinking according to the AUDIT cut off score of 8. Other studies comparing similar populations also described similar findings; a study comparing college and non-college students in the US found that although students exceeded weekly binge

drinking indicators more than non-students, students were not more likely to be diagnosed with alcohol dependence in the past year (Slutske, 2005). After adjusting for socio-demographic characteristics, another US study found that the greater risk for alcohol use disorders amongst college students lost its significance (Blanco et al., 2008). A potential explanation for this finding is thought to be systematic differences in race, family income, marital status and living arrangement (Slutske, 2005). However, the present study did account for some of these factors and a difference was only seen in race/ethnicity. Others have highlighted the role environment plays in college/university drinking habits and proposed that a developmental perspective should be used to better understand college drinking (Merrill & Carey, 2016). There is a consensus in studies with students and binge drinking on findings such as: those who live on campus accommodation are more likely to drink in a binge pattern (Heather et al., 2011; Bartoli et al., 2014), stress and inability to cope with academic pressures also play a role (i.e., drink to reduce tension) (Ham & Hope, 2003), as well as peer pressure (Bellis et al., 2010). Some of the cognitive factors identified in the literature and that may function as risk factors for binge drinking in students are: global positive changes expectancies (i.e., beliefs that alcohol can create positive feelings, and beliefs that by drinking one can become more socially assertive (Ham & Hope, 2003)). The transition to college/university is linked to higher consumptions of alcohol, in addition these students are undergoing a transition to adulthood and many will be living away from parents for the first time. Merrill & Carey (2016) named this an 'emerging adulthood framework' and described five dimensions that uniquely or as a whole may cause an impact on problem drinking: identity exploration, instability, self-focus, feeling in-between, and possibilities (Merrill & Carey, 2016).

Research has also suggested the role mental health may play in the development of alcohol related problems in college/university students (Merrill & Carey, 2016; Siqueira et al., 2015). Adolescence and young adulthood are important periods for the development of many mental health problems such as depression and alcohol/drug abuse (Burke, Burke, Regier, & Rae, 1990; Kessler et al., 2005). However, results from this study showed that university students had significantly better mental well-being than their community peers. These scores of mental well-being are lower than those found in another study that was carried out with university students in the UK using the same instrument but including both genders ($M=23.69$) (Macaskill, 2013). In addition, regression analyses showed that mental well-being was the variable with the largest effect upon hazardous drinking after controlling for socio-demographic variables and resilience. There is substantial evidence suggesting a relationship between alcohol misuse (including binge drinking) and mental health (Ham & Hope, 2003; Newbury-Birch et al., 2009; Macaskill, 2013; Healey et al., 2014; Blanco et al., 2008; Merrill & Carey, 2016) even though in some cases the causal relationship is not fully tested.

Results also showed a small, significant negative correlation between mental well-being and resilience, with higher levels of resilience associated with lower GHQ-28 scores, which suggest that being resilient, to some extent, may protect against poorer mental well-being although definite conclusions cannot be drawn due to design limitation (inability to prove causal relationship). As Rutter (2012) suggested successful coping plays an important role in resilience, perhaps the ability of this sample to successfully cope with stressful events contributed to this correlation. A similar explanation could be used to explain the small but significant negative correlation between resilience and hazardous drinking, which suggest that being

resilient may also be a protective factor to hazardous drinking. As authors have suggested the role resilience plays in 'protecting' against mental health problems, or alcohol abuse, is a complex one (Hartley, 2011; Rutter, 2012). This complexity is seen in this study with populations presenting the same levels of resilience, their resilience being correlated to better mental well-being and lesser risk of hazardous drinking, but not causing any effect on the hazardous drinking as a variable.

The interaction between resilience and mental health did not have any effect in drinking behaviour in this study. Few studies have attempted to understand the role that resilience and mental health when combined jointly exert on hazardous drinking. Hartley (2011) examined interpersonal resilience, intrapersonal resilience and mental health but with respect to academic and social integration instead of hazardous drinking (Hartley, 2011). Results showed that although intrapersonal resilience factors such as tenacity, tolerance of stress, and spirituality accounted for variability in the university cumulative grade point average (GPA), in the regression analysis mental health did not interact with resilience (Hartley, 2011, p.602) – this finding is similar to that found in the current study, thus leading to the rejection of this hypothesis. Whelan and collaborators (2015) suggested that individual differences in biology, psychology and environment must be accounted for when studying alcohol misuse in adolescents but they did not include resilience in their analyses (Whelan et al., 2015).

Since resilience and mental well-being are complex constructs with different domains used to measure them, it was decided to also examine the influence of 'population' and 'drinking status' on each of their sub-scales. Population (whether student or

community) showed a significant effect on all the mental well-being and resilience sub-scales. Unpacking the RSA (resilience) scores showed that students had higher scores in the social resources sub-scale⁴⁴ of the RSA, whereas the community sample had higher scores in structure style, perception of future and perception of self sub-scales. Although total resilience scores were similar across both samples, this result suggest that students were best in accessing social resources and this may have been the item that contributed the most to protect them against hazardous drinking patterns. Studies have suggested that the presence of social support can be seen as a protective factor against the negative consequences of alcohol (Donath et al., 2012), conversely social deprivation, and lack of social integration is linked to firstly, increased risk of hospital admission due to alcohol-related problems and secondly, binge drinking (Healey et al., 2014; Donath et al., 2012). However, drinking status (BD or NBD) had an effect only in the mental well-being variables. Confirming even further that mental well-being alone is the unique contributor to both alcohol-related problems.

Implications for Public Health

The implications of results found in this study is a serious one for public health given that young women are at a high risk group of harm from binge drinking and from starting alcohol consumption at such young age when brain development and reproductive organs are still under development through puberty (NIAAA, 2016).

⁴⁴ Questions such as: 'I can discuss personal issues with (no one or friends/family)', 'those who are good in encouraging me are (friends/family or nowhere)', 'the bond among my friends is (weak/strong)', 'I get support from (friends/family or no one)'

There is a large body of research documenting the negative consequences of binge drinking in men and women (Courtney & Polich, 2009; Donath et al., 2012; Healey et al., 2014; Merrill & Carey, 2016; D. E. Pedersen, 2013; Siqueira et al., 2015). The impact of binge drinking can be divided into three levels: individual, secondary (extended to friends/family), and institutional (schools, universities, governments). Research shows that those who binge drink are at a higher risk of drink driving, engaging in risky sexual behaviours, or violent conduct (Pedersen, 2013). Binge drinking may also impact interpersonal relationships and cause conflicts (Pedersen, 2013). At the institutional level binge drinking may contribute to lower student retention, cause students to miss classes, may cause damage to property and an increase in hospital admissions (Pedersen, 2013; Healey et al., 2014). Therefore, binge drinking has serious implications for public health, national health services, local governments, education institutions and interpersonal relationships.

Mean age of onset of drinking in this population was 14 years old for the student sample and 15 years for the community sample. In the UK, the legal age of independent drinking and purchasing alcohol in public places is 18 years (Institute of Alcohol Studies, 2009), therefore the age of onset in this study is remarkably below the legal age and this raises significant concerns. There is also evidence suggesting that the drinking levels that are considered to cause no harm in adults may cause more damage in youth (Patrick et al., 2013; Siqueira et al., 2015), hence efforts need to be made to address this major health problem.

Albeit the cross-sectional design of this analysis limits any causal-temporal conclusions, one could hypothesise that age of onset is directly linked to binge

drinking later in life. Indeed, Healey and colleagues also suggested that heavy drinking at 15 years of age can be a 'marker for future problems, including suicidal thoughts and attempts, unintentional injury, as well as drug and alcohol dependence later in life' (Healey et al., 2014, p. 126). Another study found that boys and girls who drank wines and spirits earlier in life were more likely to 'binge' drink later in life (Afitska, Plant, Weir, Miller, & Plant, 2008). Therefore, one of the challenges for public health initiatives is to continue to provide early interventions with children and their family and social environment, to prevent early onset of alcohol consumption.

The present study also suggests that resilience alone does not contribute to hazardous drinking, but having poorer mental health does. Therefore, to safeguard young people's mental well-being strategies, to prevent hazardous alcohol consumption are essential. This study has extensively discussed the risks the student population faces in developing alcohol-related problems. Non-students also face similar risks and indeed are at a higher risk of hazardous drinking. It is important that local government, schools, and universities and third sector parties recognise these and put changes in place. Initiatives to reduce alcohol consumption in the general population have been put forward by the Drinkaware Trust (charity) and by the UK government thorough campaigns such as Change4Life (NHS, 2016), policy documents such as the Alcohol Strategy (HM Government, 2012) and a policy paper about harmful drinking published in 2015 (Department of Health, 2015). These initiatives are aimed to raise awareness about the negative consequences of alcohol and teaches how to reduce and lower-limit guidelines. These initiatives need to be widespread to all age groups, therefore campaigns need to be age-related. The Drinkaware Trust (Drinkaware, 2016) recently developed a campaign about

underage drinking targeted to both parents and young people, but not much is known about how this was rolled out in schools and whether targeted younger children. With age of onset of drinking at about 14 years of age, public health campaigners need to direct their campaigns to even younger children.

Schools are fundamental in the promotion of health and well-being in children and their local community (HM Government, 2012). Therefore, it is important to use schools as a channel to inform young people about healthy life styles. This can be done by promoting healthy habits during the Personal, Social, Health and Economic (PSHE) education. The government set up in their alcohol strategy plan to review how PSHE is being used and set up a 'core outcome' to improve the quality of PSHE. As this sample of students from the University of Birmingham presented with a high prevalence of binge drinking, it is important that the university develop specific strategies to prevent this problem or to help those in need. The current policy on Drugs and Alcohol (University of Birmingham, 2016b) concludes that 'the University will ensure that appropriate support and advice is available to students but will also take disciplinary action, where illegal activities are taking place and particularly when they endanger the individual student or other members of the University' (p.5) which adopts a more blaming role than a supportive one. It is important for the university to be aware about the extent of this problem, carrying out surveys using the AUDIT would inform interventions. Heather and colleagues (2012) have highlighted the use of web-based interventions developed and evaluated for use among university students (Bewick, Trusler, Mulhern, Barkham, & Hill, 2008; Kypros Kypri et al., 2009).

Implication for Research

Longitudinal studies are needed to assess the relationship between age of onset of alcohol and alcohol-related problems and other sequelae later in life. In addition, it is essential that studies attempt to adopt a protocol that can facilitate comparison with other studies across the world, the large heterogeneity in measures used to define binge drinking, hazardous drinking, mental well-being and resilience may pose a challenge. Using the AUDIT, a now established measure, frequently used worldwide and validated in different countries and cultures is a first step. Therefore, the use of this instrument in this study can be seen as a strength. Longitudinal studies could also shed more light on how resilience factors may affect mental health over time.

Protocols need also to be inclusive with as many potential factors associated to hazardous drinking as it is possible, thus encompassing many different domains of life. Face-to-face semi-structured interviews or a qualitative component could minimise the risk of underreporting alcohol use, a phenomenon previously described by some authors due to the high cut off of the AUDIT generally used for women (Heather et al., 2011). Details about type of course enrolled and year of study are also important variables to be included – these have been identified as having an impact on pattern of hazardous drinking (Heather et al., 2011). In addition, specific questionnaires about coping styles could clarify the role of resilience in binge drinking.

Implications for Clinical Psychology

One of the most important findings in this study is that mental well-being plays a significant role in hazardous drinking. Although the direction of this relationship is

impossible to be ascertained in this study this finding poses a challenge also to Clinical Psychologists who can continue to work to raise awareness about mental health. In addition, when raising awareness about mental health and its links to alcohol-related problems, it is essential that Clinical Psychologists continue to work together with other health professionals, educators, public health analysts, private or governmental institutions, and policy makers to put strategies in place to prevent early age of onset of drinking and to reduce stigma about mental health. It is essential that those at risk of binge drinking, regardless of the reasons for it, are also aware of the help available to them.

Campaigns such as 'Time To Change' (Time to Change, 2016) aimed to help people change their views about mental health have become a 'movement' and are currently led by two charities: Mind and Rethink Mental Illness. Working in partnership with schools and universities is essential to extend this message to young people.

The University of Birmingham has put in place campaigns such as 'mind your head' week where students could learn about activities to 'de-stress' and the importance of good mental health and how to access support (University of Birmingham, 2016a). It is fundamental that these continue to take place in a continuous basis to prevent a deterioration of mental well-being and potential alcohol-related problems.

Strengths and Limitations

One of the main strengths of this study is the use of two large samples that tend to be studied separately. There are a large number of studies focusing either on the

student population or general population of adults aged 18 years and over. To our knowledge there are not many studies comparing a student population with a community sample. Therefore, the contribution of this study to the binge drinking literature is unique. Another strength is the use of valid and reliable outcome measures which also showed excellent internal consistency in this study. Although this study only included female participants it is in line with current statistics that suggest a shift of alcohol consumption in this group (i.e. an increase of binge drinking). Therefore, this study can provide further hypotheses underlying this change.

Sampling bias may have been introduced in this study. University students that took part in the study could count their participation as credits towards the course's research component, explaining the higher number of participants in this sample. In addition, students were selected from the undergraduate Psychology course and one could assume that psychology students are a more homogeneous group and more likely to be aware about their emotions and are more likely to seek help for emotional problems. The community sample was selected via social media. On this basis, the study could have attracted those who were in need of help for their emotional problems (the community sample had a poorer mental health than the student sample).

Another limitation of this study is its cross- sectional analysis that prevents any conclusions with regards to causality. Also, the protocol (questionnaires) adopted by both studies that form this report was limited in the sense that no in-depth information about social support (specific social support questionnaire including

social network), or more information about social demographic factors were included (family composition, social deprivation status, income). Furthermore, the full MAP scale was not used, hence analyses were carried out without taking into account drug use which the literature has shown to have an effect on alcohol consumption (Skogen et al., 2014).

The sample of this study is not a representative sample of the whole undergraduate population in England: probability sampling methods were not used. Therefore, generalisability is compromised and potentially limited to young women and university college students enrolled in a science-based course in Birmingham. Research has suggested gender differences in binge drinking (Pedersen, 2013) and different drinking patterns across university degree courses. For instance Heather and colleagues (2011) found a difference between students on sports courses (AUDIT mean scores=10.9), and those enrolled in science-based ($M=9.5$), and art-based courses ($M = 8.8$) (Heather et al., 2011).

It was not in the scope of this study to unpack the complexity of the concepts of binge drinking and hazardous drinking. However, one can hypothesise that these are embedded and, as Berridge and colleagues described (2009), 'confused' concepts may be interacting and thus explaining to some extent some of the results found in this analysis. Further research is necessary to understand the underlying causes of binge drinking, the differences between students and non-students, as well as to study the validity of a resilience concept and its relationship to mental health.

CONCLUSION

In conclusion, this study found significant differences in binge drinking, patterns of hazardous drinking and mental well-being between two large samples of university students and their community peers in an urban area in the Midlands, England. Age of onset of alcohol consumption was alarmingly young and prevalence of binge drinking alarmingly high. Although the a priori hypothesis of resilience interacting with mental health to cause an effect on binge drinking could not be supported, this study found consistently that mental well-being was the unique and the largest contributor to hazardous drinking as defined by the AUDIT, a valid and reliable measure. Although university students had the largest prevalence of binge drinking and resilience levels were similar across populations, the community sample had poorer mental health and were at a higher risk of hazardous drinking. These findings pose a challenge to public health and clinical psychology and current policies and campaigns need to start early and involve parents, schools, universities and interventions at a societal and economic level.

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3. PUBLIC DOMAIN PAPER

This document provides an overview of the literature review and research paper that was submitted as part of the requirements for the degree of Doctorate in Clinical Psychology at the University of Birmingham. There are two sections to the research – a systematic review and an empirical study.

SYSTEMATIC REVIEW

What are the contributory factors affecting psychological distress in adults with bladder cancer?

Aim

The first part of this volume is a literature review exploring the main factors that contribute to psychological distress in bladder cancer patients.

Method

Four different databases were searched for academic papers published from 1985 onwards. All studies that explored psychological distress in people with bladder cancer were included. Studies that focussed on quality of life (QoL) were also reviewed if their results included data on emotional well-being in bladder cancer.

Results

A total of twenty-six papers were included in the review. The studies varied in terms of the methods used and the quality of the studies overall, with some being rated as only of poor or moderate quality, but many being rated highly. The most common factors identified as potential contributors to psychological distress were 1) bladder cancer specific treatments (e.g. type of surgery), 2) psychological factors and resource (e.g. coping mechanisms), 3) socio-demographic factors (e.g. age and

gender), 4) social support (e.g. social isolation), 5) cancer related factors (e.g. stages of cancer), 6) functional and cognitive impairment (e.g. not able to carry out activities of daily living), 7) physical health (e.g. number of other physical conditions), and 8) interventions (e.g. psychoeducation).

Discussion

This review highlights that, although bladder cancer is one of the top 10 most common cancers in the UK, there is a lack of rigorous empirical research examining the psychological factors associated with this disease. The review also suggests that bladder cancer specific treatments, such as stoma surgery, account for the distress and reduced quality of life for people with this disease, due to their unique impact on self-image and sexual functioning. The way people cope with the cancer will also affect the extent of their distress. The use of bladder-specific quality of life questionnaires and the use of standardised measures of distress are essential to provide a clearer picture of the psychological consequences of having bladder cancer and to better inform psychological interventions for this population.

RESEARCH PROJECT:

The comparison of binge drinking in young females from two populations: the role of mental health and resilience.

Aim

The second part of this volume encompasses the research project, which compared binge drinking between a community sample and a university student sample of young women. The study also looked into the role that resilience and mental health play in hazardous drinking.

Method

A secondary data analysis of two datasets was carried out. The following hypotheses were tested using quantitative methods: 1) students would binge drink more than their community peers, 2) more resilient participants would have better mental health and engage less in hazardous drinking, and 3) resilience and mental health would interact in their effect on hazardous drinking. Binge drinking was defined as answering yes to the following question: “have you had two episodes or more where you have had four or more drinks in a row over the past two weeks?”. Hazardous drinking (i.e. a pattern of alcohol consumption that increases the risk of harmful consequences due to drinking) was measured using the Alcohol Use Disorders Identification Test (AUDIT). Mental well-being was measured using the General Health Questionnaire 28 items (GHQ-28), and resilience was measured using the Resilience Scale for Adults (RSA).

Results

A total of 409 participants aged 18-24 years old were included in this study (161 community and 248 students). The prevalence of binge drinking across the two

samples was 56.2% which is similar to the UK prevalence, but considered high. Although students had a higher prevalence of binge drinking this difference was not significant, but young women from the community sample were at a significantly higher risk for engaging in hazardous drinking. Those with higher scores on the resilience scale had better mental health than those with lower scores. There was no interaction between resilience and mental health on their impact on hazardous drinking. However, mental well-being alone was the factor contributing the most to hazardous drinking, with resilience not found to be playing any part.

Discussion

Results from this study highlight the extent of the problem with binge drinking in young women in the UK. The high prevalence of binge drinking in this study, and the early onset of alcohol consumption (at 14 years of age) in young women is in accordance with evidence suggesting that there has been a shift in patterns of alcohol consumption, with women now binge drinking more than men. Such a shift imposes a challenge to public health and highlights the importance of raising awareness of the negative consequences of alcohol consumption in young women who are more vulnerable to harm from alcohol because of their biological, physical and genetic makeup. In addition, mental health plays a substantial role in putting young women at a higher risk of hazardous drinking. Therefore, interventions to prevent mental ill health and promote psychological well-being are likely to also prevent alcohol-related problems.

IMPLICATIONS

The implications of both the review and the research project offer valuable input into the literature of binge drinking in young women and psychological distress in bladder

cancer respectively. Both research areas have gone some way to filling a gap in the literature and subsequent evidence available. A common theme permeates both pieces of work: one of public health and the importance of psychological risk factors. Results from the literature review suggest that psychological distress, defined as depression, anxiety, or acute stress, may be a consequence of the type of treatment chosen by the patient, of coping styles used, of social isolation, of age and gender, of number of other physical health conditions, of beliefs about the world and oneself (spirituality) and of the stage of the cancer. The strong evidence produced by the field of psycho-oncology has contributed to changes in the provision of oncology care and has helped to implement assessment and screening for psychological problems in their routine procedures. However, very few studies have focused on bladder cancer specifically which presents unique psychological challenges due to the singularity of its treatment and its impact on body image and sexual functioning. Results from the research project suggest that psychological (mental) well-being is the factor with the strongest effect on hazardous drinking. An unexpected finding was that although students have the highest prevalence of binge drinking, the community sample was the one at the higher risk for hazardous drinking and this difference was partially explained by the student sample having better mental health, while resilience did not play any part in this association. In the field of binge drinking most studies focus on the student population only with very few studies, mainly from the USA, comparing outcomes between different samples. The direction of the association between psychological distress and cancer and between mental health and binge drinking is hard to ascertain (e.g. whether having depression in the first place affects how one copes with cancer treatment and therefore generates more distress, or whether having a mental health problem in the first place will make a

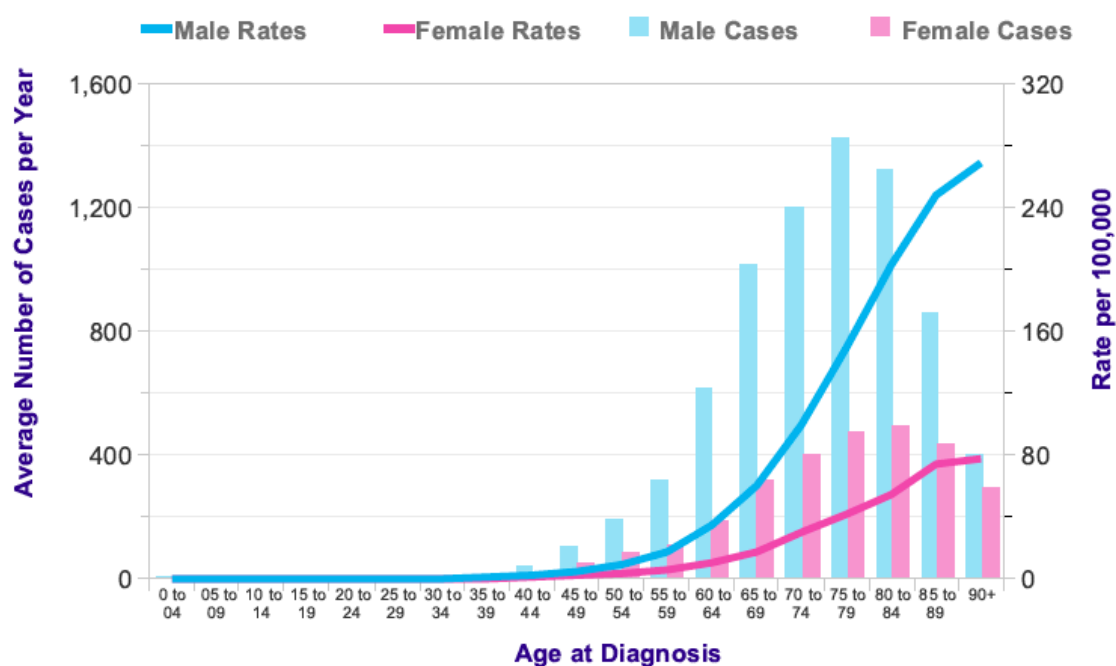
young person start to drink). Longitudinal studies in both fields of research are necessary to clarify the causal relationships and explore trajectories and changes over time. Nevertheless, results from these studies suggest that bladder cancer and binge drinking result in significant psychological sequelae and that public health and health care systems need to ensure better mental health for all.

Appendix 1 – Incidence of bladder cancer in the UK by age

Bladder Cancer (C67): 2012-2014

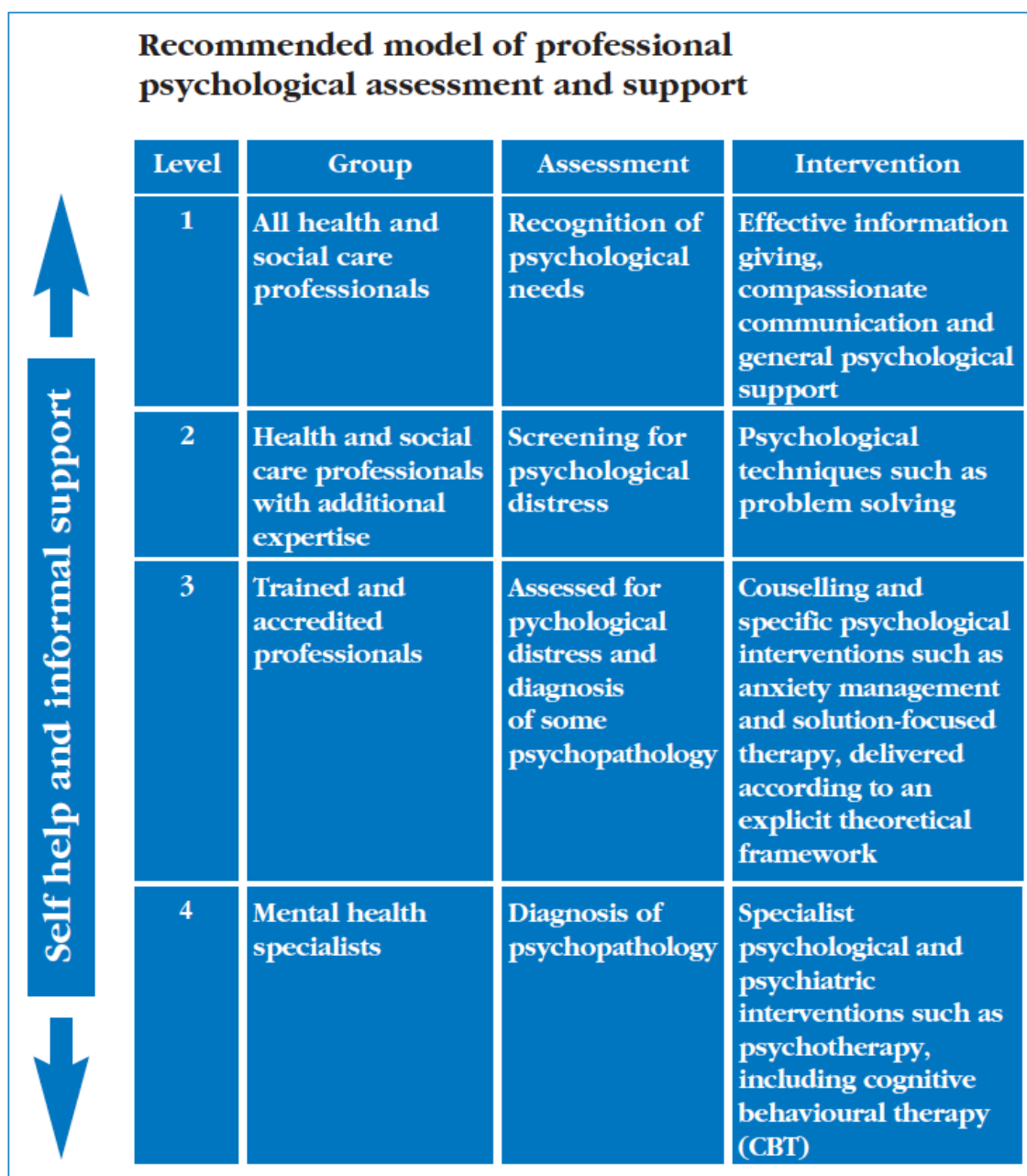
Average Number of New Cases Per Year and Age-Specific Incidence Rates per 100,000 Population, UK

Age Range	Male Cases	Female Cases	Male Rates	Female Rates
0 to 04	3	0	0.1	0.0
05 to 09	0	1	0.0	0.1
10 to 14	1	0	0.1	0.0
15 to 19	0	2	0.0	0.1
20 to 24	1	0	0.0	0.0
25 to 29	2	2	0.1	0.1
30 to 34	6	6	0.3	0.3
35 to 39	13	8	0.7	0.4
40 to 44	42	25	1.9	1.1
45 to 49	107	52	4.6	2.2
50 to 54	191	87	8.9	4.0
55 to 59	321	110	17.3	5.8
60 to 64	612	183	35.1	10.1
65 to 69	1,015	317	60.2	17.8
70 to 74	1,197	401	99.2	29.9
75 to 79	1,426	474	149.4	41.6
80 to 84	1,324	494	203.4	54.9
85 to 89	856	436	248.1	73.7
90+	400	296	268.6	77.5
All Ages	7,517	2,893	23.8	8.9



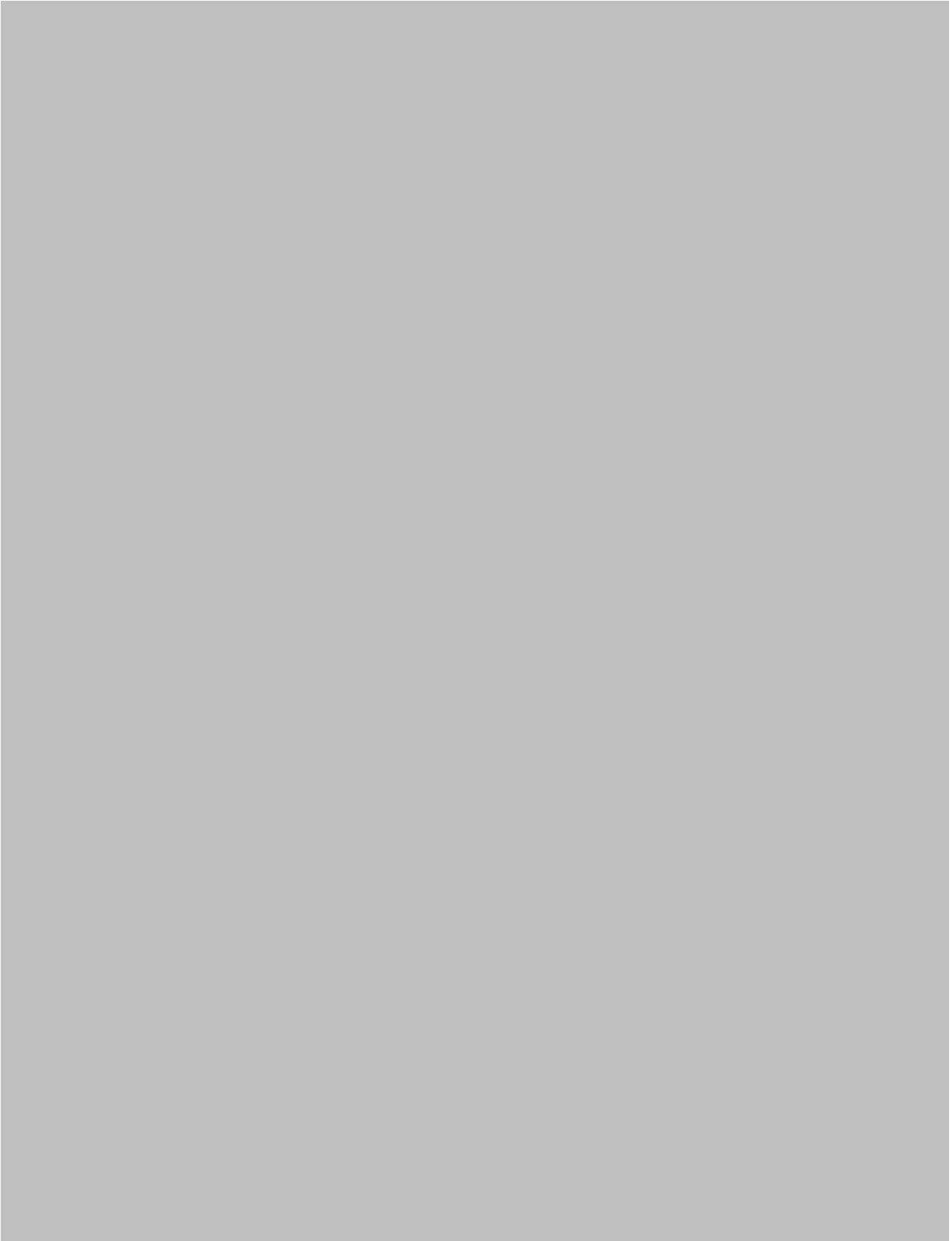
Source: Cancer Research UK, http://www.cancerresearchuk.org/sites/default/files/cstream-node/cases_crude_bladder_l14.pdf, accessed November 2016

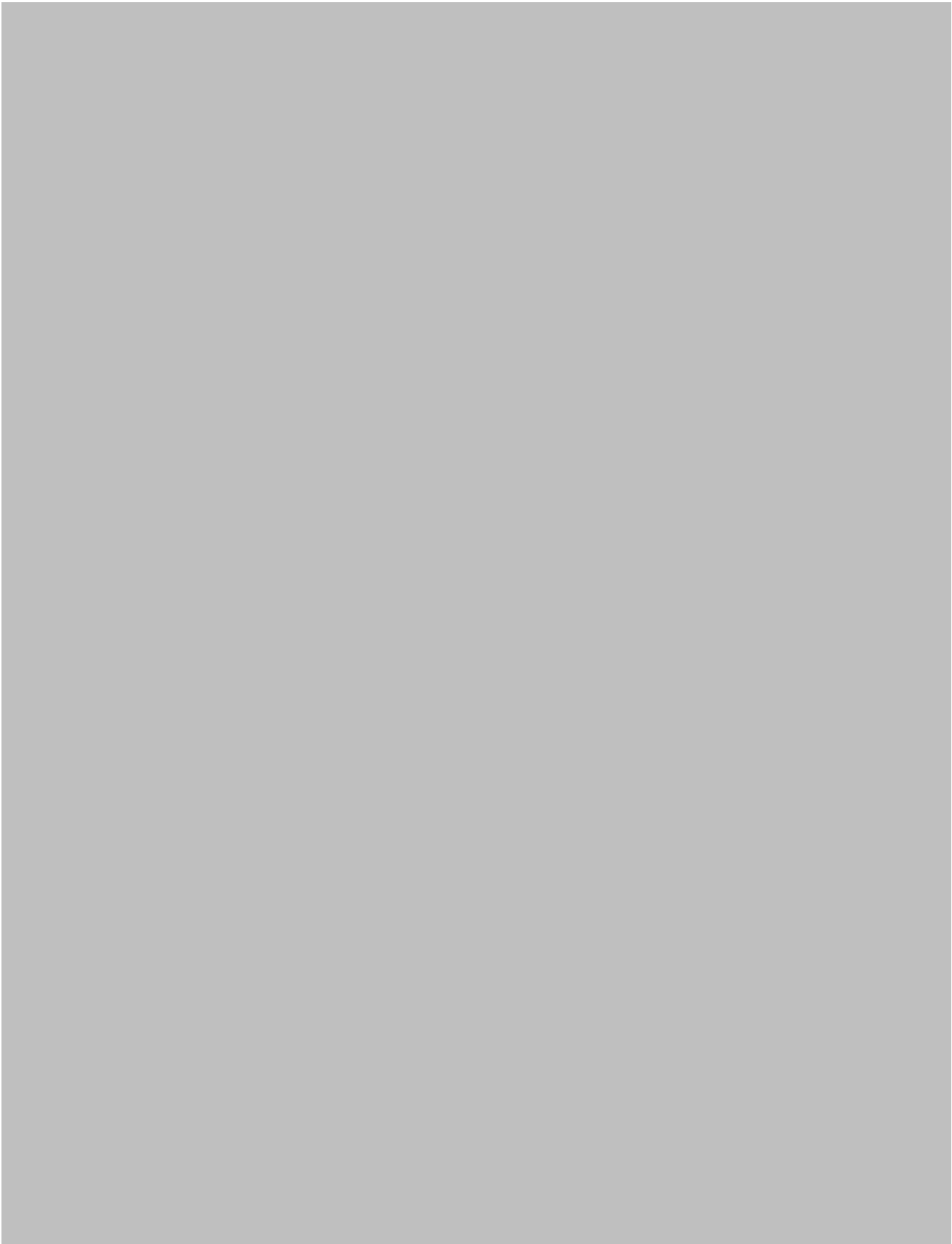
Appendix 2 – NICE 4-level model of professional psychological assessment and intervention



Source: NICE (2004) *Improving Supportive and Palliative Care for Adults with Cancer*.
National Institute for Clinical Excellence: London, UK

Appendix 3: Ethical Approvals for the both studies





Appendix 4 – Questionnaires

Section 1

1. Age: _____

2. Ethnic group
Indian _____
Caucasian _____
Black-African _____
Asian _____

3. Marital Status
Single _____
In a relationship/engaged _____
Married/Civil partner _____
Decline to answer _____
Other _____

4. Living Status
Alone _____
Living with parents _____
Living with partner _____
Shared accommodation _____
Other _____

5. Age of onset when alcohol consumption began: years

6. Have you had two episodes or more where you have had four or more drinks in a row over the past two weeks?
Yes ☐ No ☐

7. At what age did you begin having four or more drinks in a row within two weeks? years

8. Do you regularly drink more than 6 units of alcohol?

Yes ☐

No ☐

9. At what age did you begin having four or more drinks in a row within two weeks? years

Section 2 - AUDIT

Please tick the box which applies to you

1. How often do you have a drink containing alcohol?

☐ Never ☐ Monthly or less 2-4
☐ times a month 2-3 times ☐ a week >4 ☐ times
a week

2. How many drinks containing alcohol do you have on a typical day when you are drinking?

1-2 3-4 5-6 7-9 10 or more
☐ ☐ ☐ ☐ ☐

3. How often do you have six or more drinks on one occasion

Never Less than monthly Monthly Weekly Daily or almost daily
☐ ☐ ☐ ☐ ☐

4. How often during the last year have you found it difficult to get the thought of alcohol out of your mind?

Never Less than monthly Monthly Weekly Daily or almost daily
☐ ☐ ☐ ☐ ☐

5. How often during the last year have you found that you were not able to stop drinking once you had started?

Never Less than monthly Monthly Weekly Daily or almost daily
☐ ☐ ☐ ☐ ☐

6. How often during the last year have you been unable to remember what happened the night before because you have been drinking?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. How often during the last year have you had a feeling of guilt or remorse after drinking?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Have you or someone else been injured as a result of your drinking behaviour?

No	Yes, but not in the last year	Yes, during the last year
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. Has a relative or friend or a doctor or other health worker been concerned about your drinking or suggested you cut down?

No	Yes, but not in the last year	Yes, during the last year
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 3 - MAP

Have you used any of the substances listed below in the last 30 days, please tick either "yes" or "no".

Type of Substance	Yes	No
Alcohol	<input type="checkbox"/>	<input type="checkbox"/>
Cannabis	<input type="checkbox"/>	<input type="checkbox"/>
Heroin	<input type="checkbox"/>	<input type="checkbox"/>
Illicit Methadone	<input type="checkbox"/>	<input type="checkbox"/>
Illicit Benzodiazepines	<input type="checkbox"/>	<input type="checkbox"/>
Cocaine Powder	<input type="checkbox"/>	<input type="checkbox"/>

Crack/ Rock/ Cocaine	<input type="checkbox"/>	<input type="checkbox"/>
Amphetamines	<input type="checkbox"/>	<input type="checkbox"/>
Other	Please	
specify.....		

Section 4 – GHQ-28

Please answer all the questions and tick the box which closely applies to you

Have you recently...

A1 –been feeling perfectly well and in good health?

Better than usual	Same as usual	Worse than usual	Much worse than usual
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A2 –been feeling in need of a good tonic?

Not at all	No more than usual	Rather more than usual	Much more than usual
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A3 –been feeling run down and out of sorts?

Not at all	No more than usual	Rather more than usual	Much more than usual
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A4 –felt that you are ill?

Not at all	No more than usual	Rather more than usual	Much more than usual
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A5 –been getting any pains in your head?

Not at all	No more than usual	Rather more than usual	Much more than usual
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A6 –been getting a feeling of tightness or pressure in your head?

Not at all No more than usual Rather more than usual Much more than usual

☐☐☐☐

A7 –been having hot or cold spells?

Not at all No more than usual Rather more than usual Much more than usual

☐☐☐☐

Have you recently...

B1 –lost much sleep over worrying?

Not at all No more than usual Rather more than usual Much more than usual

☐☐☐☐

B2 –had difficulty in staying asleep once you are off?

Not at all No more than usual Rather more than usual Much more than usual

☐☐☐☐

B3 –felt constantly under strain?

Not at all No more than usual Rather more than usual Much more than usual

☐☐☐☐

B4 –been getting edgy and bad tempered?

Not at all No more than usual Rather more than usual Much more than usual

☐☐☐☐

B5 –been getting scared or panicky for no good reason?

Not at all No more than usual Rather more than usual Much more than usual

☐☐☐☐

B6 –found everything getting on top of you?

Not at all No more than usual Rather more than usual Much more than usual

☐☐☐☐

B7 –been feeling nervous and strung up all the time?

Not at all No more than usual Rather more than usual Much more than usual

☐☐☐☐

Have you recently...

C1 –been managing to keep yourself busy and occupied?

More so than usual Same as usual Rather less than usual Much less than usual

☐☐☐☐

C2 –been taking longer over the things you do?

Quicker than usual Same as usual Longer than usual Much longer than usual

☐☐☐☐

C3 –felt that on the whole you were doing things well?

Better than usual About the same Less well than usual Much less well

☐☐☐☐

C4 –been satisfied with the way you've carried out your task?

More satisfied

☐

About the same as usual

☐

Less satisfied than usual

☐

Much less satisfied

☐

C5 –felt than you are playing a useful part in things?

More so than usual Same as usual Less useful than usual Much less useful

☐☐☐☐

C6 –felt capable of making decisions about things?

More so than usual Same as usual Less so than usual Much less capable

☐☐☐☐

C7 –been able to enjoy your normal day-to-day activities?

More so than usual Same as usual Less so than usual Much less than usual

☐☐☐☐

Have you recently...

D1 –been thinking of yourself as a worthless person?

Not at all No more than usual Rather more than usual Much more than usual

☐☐☐☐

D2 –felt that life is entirely hopeless?

Not at all No more than usual Rather more than usual Much more than usual

☐☐☐☐

D3 –felt that life isn't worth living?

Not at all No more than usual Rather more than usual Much more than usual

☐☐☐☐

D4 –thought of the possibility that you might make away with yourself?

Definitely not I don't think so Has crossed my mind Definitely have

☐☐☐☐

D5 –found at times you couldn't do anything because you're nerves were too bad?

Not at all No more than usual Rather more than usual Much more than usual

☐☐☐☐

D6 –found yourself wishing you were dead and away from it all?

Not at all No more than usual Rather more than usual Much more than usual

☐☐☐☐

D7 –found that the idea of taking your own life kept coming into your mind?

Definitely not

☐

I don't think so

☐

Has crossed my mind

☐

Definitely has

☐

Section 5 – RSA – Resilience

Personal Strength/ Perception of self

1. When something unforeseen happens...

I always find a solution

☐☐☐☐☐

I often feel bewildered

2. My personal problems...

Are unsolvable

☐☐☐☐☐

I know how to solve

3. My abilities...

I strongly believe in

☐☐☐☐☐

I am uncertain about

4. My judgements and decision...

I often doubt

☐☐☐☐☐

I trust completely

5. In difficult periods I have a tendency to...

View everything gloomy

☐☐☐☐☐

Find something good
that helps me thrive

6. Events in my life that I cannot influence...

I manage to come to terms with

☐☐☐☐☐

Are a constant source
of worry/concern

Personal strength/ Perception of future

1. My plans for the future are...

Difficult to accomplish

☐☐☐☐☐

Possible to accomplish

2. My future goals...

I know how to accomplish

☐☐☐☐☐

I am unsure how to
accomplish

3. I feel that my future looks...

Very promising

☐☐☐☐☐

Uncertain

4. My goals for the future are...

Unclear

☐☐☐☐☐

Well thought through

Structured style

1. I am at my best when I...

Have a clear goal to strive for

☐☐☐☐☐

Can take one day at a
time

2. When I start on new things/ projects...

I rarely plan ahead I just get on with it

☐☐☐☐☐

I prefer to have a
thought through
plan

3. I am good at...

Organizing my time

☐☐☐☐☐

Wasting my time

4. Rules and regular routines...

Are absent in my everyday life

☐☐☐☐☐

Simplify my
everyday life

Social Competence

1. I enjoy being...

Together with other people

☐☐☐☐☐

By myself

2. To be flexible in social meetings...

Is not important to me

☐☐☐☐☐

Is really
important to me

3. New friendships are something...

I make easily

☐☐☐☐☐

I have difficulty
making

4. Meeting new people is...
 Difficult for me ☐ ☐ ☐ ☐ ☐ Something I'm good at

5. When I am with others...
 I easily laugh ☐ ☐ ☐ ☐ ☐ I seldom laugh

6. For me, thinking of good topics for conversation is...
 Difficult ☐ ☐ ☐ ☐ ☐ Easy

Family Cohesion

1. My family's understanding of what is important in life is...
 Quite different than mine ☐ ☐ ☐ ☐ ☐ Very similar to mine

2. I feel...
 Very happy with my family ☐ ☐ ☐ ☐ ☐ Very unhappy with my family

3. My family is characterized by...
 Disconnection ☐ ☐ ☐ ☐ ☐ Healthy coherence

4. In difficult periods my family...
 Keeps a positive outlook on the future ☐ ☐ ☐ ☐ ☐ Views the future as gloomy

5. Facing other people, our family acts...
 Unsupportive to one another ☐ ☐ ☐ ☐ ☐ Loyal towards one another

6. In my family we like to...
 Do things on our own ☐ ☐ ☐ ☐ ☐ Do things together

Social resources

1. I can discuss personal issues with...
No one ☐☐☐☐☐ Friends/ family
2. Those who are good at encouraging me are...
Some close friends/ family-members ☐☐☐☐☐ Nowhere
3. The bond among my friends is...
Weak ☐☐☐☐☐ Strong
4. When a family member experiences a crisis/ emergency...
I am informed right away ☐☐☐☐☐ It takes quite a while before I am told
5. I get support from...
Friends/ family members ☐☐☐☐☐ No one
6. When needed, I have...
No one who can help me ☐☐☐☐☐ Always someone who can help me
7. My close friends/ family members...
Appreciate my qualities ☐☐☐☐☐ Dislike my qualities

Appendix 5 – Correlation Table (SPSS output)

Correlations					
		Population	Total AUDIT	GHQ full scale total	Resilience Total Score
Population	Pearson Correlation	1	-.707**	-.807**	.010
	Sig. (2-tailed)		.000	.000	.838
	N	409	401	399	409
Total AUDIT	Pearson Correlation	-.707**	1	.743**	-.071
	Sig. (2-tailed)	.000		.000	.159
	N	401	401	391	401
GHQ full scale total	Pearson Correlation	-.807**	.743**	1	-.180**
	Sig. (2-tailed)	.000	.000		.000
	N	399	391	399	399
Resilience Total Score	Pearson Correlation	.010	-.071	-.180**	1
	Sig. (2-tailed)	.838	.159	.000	
	N	409	401	399	409

** . Correlation is significant at the 0.01 level (2-tailed).