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INTRODUCTION

Background

In the context of the high prevalence of mental illnesses (Wittchen et al. 2011), the current rates of unmet need for mental health care (Olesen et al. 2012, World Health Organization 2008), and the predicted increase in burden on health arising from mental illnesses (Grandes et al. 2011), the provision of timely access to mental health care presents major challenges for Europe (Olesen et al. 2012). Juxtaposed against a growing body of evidence pointing to improved patient outcomes associated with early detection and intervention for mental illnesses (Schmidt et al. 2015, Stafford et al. 2013), the need for innovative strategies to address unmet need and improve access to mental health care is significant (Whiteford et al. 2010).

Mental health triage

The purpose of the present study was to develop a reliable mental health triage scale for use in UK mental health triage and crisis services. Improving access to mental health care and reducing wait times for treatment is a priority in current UK mental health policy (UK Department of Health 1999, UK Department of Health 2014). With a strong focus on early intervention and prevention, the UK Crisis Care Concordat (Department of Health and Concordat Signatories 2014) provides clear direction on the need to improve access to mental health services, especially for people experiencing mental health crises. In line with these policy directives, Abertawe Bro Morgannwg (ABM) University Health Board in South Wales, and Bradford District Care National Health

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ABSTRACT: Mental health triage scales are clinical tools used at point of entry to specialist mental health service to provide a systematic way of categorizing the urgency of clinical presentations, and determining an appropriate service response and an optimal timeframe for intervention. The aim of the present study was to test the interrater reliability of a mental health triage scale developed for use in UK mental health triage and crisis services. An interrater reliability study was undertaken. Triage clinicians from England and Wales (n = 66) used the UK Mental Health Triage Scale (UK MHTS) to rate the urgency of 21 validated mental health triage scenarios derived from real occasions of triage. Interrater reliability was calculated using Kendall’s coefficient of concordance (w) and intraclass correlation coefficient (ICC) statistics. The average ICC was 0.997 (95% confidence interval (CI): 0.996–0.999 (F (20, 1300) = 394.762, P < 0.001). The single measure ICC was 0.856 (95% CI: 0.776–0.926 (F (20, 1300) = 394.762, P < 0.001). The overall Kendall’s w was 0.88 (P < 0.001). The UK MHTS shows substantial levels of interrater reliability. Reliable mental health triage scales employed within effective mental health triage systems offer possibilities for not only improved patient outcomes and experiences, but also for efficient use of finite specialist mental health services.

KEY WORDS: crisis care, mental health, psychiatric emergency, triage, triage scale.
Service (NHS) Foundation Trust, England, have established new models for care aimed at increasing access to mental health crisis care. Based on mental health triage models established in Australia in the late 1990s in the context of deinstitutionalization (Grigg et al. 2004, Sands 2004), these services provide 24/seven access to specialist mental services via a single point of entry.

Mental health triage is the process of initial assessment that occurs at point of entry to the mental health service. A brief psychiatric screening assessment is undertaken on all referrals to determine whether the person has a mental health-related problem, the urgency of the problem, and the most appropriate service response (Grigg et al. 2004, Sands et al. 2013a). Triage might also be used for assessment and support for current and former service users who make unplanned contact with the mental health service (Department of Health Victoria 2009). Typically telephone-based (Sands et al. 2013a), these services are located within the emergency department of the general hospital, in the community mental health clinic, co-located at the psychiatric unit, or in a telephone call centre (Grigg et al. 2004, Sands et al. 2013a).

Mental health triage scales
In mental health triage models, all referrals and requests for mental health services are triaged to determine the main presenting problem, associated risks, and the most appropriate service response and timeframe for intervention (Sands et al. 2013a). Mental health triage scales are clinical tools used to guide triage assessment and dispositional decision-making (Department of Health Victoria 2009). Triage scales provide a systematic way of categorizing the urgency of clinical presentations, and determining an appropriate service response and an optimal timeframe for intervention, if required (Department of Health Victoria 2009; Sands et al. 2013a).

There is a paucity of recent research specifically investigating the use mental health triage scales in specialist psychiatric settings. Two studies were identified in the published literature that report on the development (Bengelsdorf et al. 1984) and reliability (Turner and Turner 1991) of the Crisis Triage Rating Scale, which is used to rate three dimensions of assessment – dangerousness, support system, and ability to cooperate – to determine the need for hospitalization. In a study conducted with a sample of college students, a triage assessment form was developed that uses a Likert-type scale to rate the type and severity of crises in three domains of assessment: affective, behavioural, and cognitive status (Myer et al. 1992). More recent research examined 618 episodes of crisis to determine the predictive ability of clinician ratings in five dimensions of clinical assessment (danger to self, danger to others, functional decline, confusion, and depression) to differentiate triage referral options (Bonynge & Thurber 2008). No previously-published studies were identified that report on the reliability of seven-tier mental health triage scales. Using the guidelines developed by Kottner et al (2011) for reporting reliability studies, we report the findings of a study that investigated the interrater reliability of the UK Mental Health Triage Scale (UK MHTS), a seven-tier triage scale developed for use in UK mental health triage and crisis care services.

MATERIALS AND METHODS
Ethical approval
The project was reviewed by ABM University Health Board (Port Talbot, Wales, UK) and Bradford District Care NHS Foundation Trust Research and Development Departments (Bradford, England, UK), and granted approval to proceed as service evaluation research. The research was carried out in accordance with the Declaration of Helsinki in 1995 (as revised in Brazil, 2013).

Design
The present study was an interrater reliability study using a 34-item cross-sectional survey.

Procedures
The UK MHTS was adapted from an Australian mental health triage scale (Department of Health Victoria, 2009), which was modified to include some items from an existing Welsh Old Age Psychiatry Referral Algorithm (Colgate & Jones 2007). The Victorian Mental Health Triage Scale (Victorian Department of Health 2010) was developed and implemented as part of a Victorian initiative to improve the quality and safety of public mental health triage services statewide (Sand & Gerdtz 2008). The timeframes used in the Victorian scale were developed to account for the broad range of levels of urgency and acuity of contacts to triage from the community and other service providers, and to ensure defined and accountable service response times. The urgency timeframes, triage categories, and guidelines were pilot tested and subject to reliability testing in a multisite project that involved triage clinicians, consumers, carers, educators, the office of the chief psychiatrist, and other stakeholders (Sands & Gerdtz 2005). The Victorian Mental Health Triage Scale was subsequently mandated for use statewide in 2010 (Department of Health Victoria 2010). The UK version of the scale was then subject to preliminary validity and reliability testing using an expert panel of multidisciplinary mental health triage and crisis experts from...
Australia, Wales, and England (n = 14). The expert panel was purposively selected for their expertise and knowledge in mental health triage and crisis teams, and mental health triage scale development. The panel included senior clinical (n = 10) and academic (n = 4) stakeholders. Several panel members had previous experience in mental health triage scale development in aged and paediatric settings in the UK context. Clinical experts from Wales, England, and Australia had significant clinical experience in mental health triage and crisis assessment team clinical roles, and held clinical leadership roles. All clinical and academic experts held specialist qualifications in mental health, and the majority held postgraduate qualifications. Several of the Australian clinical experts had previous experience as expert panel members on the Victorian Mental Health Triage Scale reliability study (Sands & Gerdtz 2008).

The expert panel completed a 41-item survey comprising 12 standard demographic items, 28 mental health triage scenarios, and one qualitative question. Interrater reliability was calculated for the scale using Kendall’s coefficient of concordance (w) (0.89 (P < 0.001)) and intraclass correlation coefficient (ICC). The average measure ICC was 0.991 (95% confidence interval (CI): 0.983–0.996 (F (20, 260) = 106.246, P < 0.001)). The single measure ICC was 0.883 (95% CI: 0.809–0.941 (F (20, 260) = 106.246, P < 0.001)). Based on expert panel feedback, minor alterations were made to service response times in two of the urgency categories, and minor changes were made to some terminology to bring the scale into closer alignment with existing UK service provision. The UK MHTS is presented in Table 1.

Survey instrument
The survey instrument was pilot tested by the expert panel, modified, and then used in the main study. The original survey contained 28 mental health triage scenarios. Using established methods for determining content validity (Lynn 1986), the expert panel rated the 28 scenarios for clarity and relevance. The scenarios that attained the highest relevance ratings and the highest levels of interrater reliability (minimum 50% of raters in modal category) were retained, leaving 21 scenarios in the final survey.

Sample
No previous studies investigating the reliability of seven-tier mental health triage scales were found to guide sample size calculations for this study. We used a convenience sample of multidisciplinary mental health triage and crisis clinicians from two specialist mental health services in Wales and England (n = 66).

Participants
All staff currently employed in triage and crisis roles at the two sites were eligible to participate in the study. Study participants were recruited via the project information flyer circulated to the team members via email. Participation in the study was on a voluntary basis. Consent to participate was indicated by attendance at the training and verbal consent to participate in the survey.

Data collection
A 34-item, cross-sectional survey was administered to two cohorts of multidisciplinary mental health triage and crisis clinicians (n = 66) from Wales and England. A 2-hour training session on the use of the UK MHTS was provided to participants prior to completing the survey. Participants used the UK MHTS to rate the urgency of 21 mental health triage scenarios, which were presented as a brief triage note.

Data analysis
Interrater reliability analysis using Kendall’s w was performed in Minitab 16 statistical software (2010; State College, PA, USA) to determine consistency among raters. IBM SPSS Statistics for Windows, (version 22.0; Armonk NY, USA) was used to compute the ICC using a two-factor mixed-effects model and type consistency.

RESULTS
Sixty-six clinicians participated in the survey. The sample characteristics are reported in Table 2.

The participants’ level of experience as mental health clinicians varied from 2 months to 37 years (median interquartile range (IQR): 11.5 (4–20)). Half (n = 33, 50%) reported previous experience using a mental health triage scale; most of these (n = 22) for less than 12 months.

Interrater reliability
The UK MHTS shows substantial levels of interrater reliability. The average measure ICC was 0.997 (95% CI: 0.996–0.999 (F (20, 1300) = 394.762, P < .001)). The single measure ICC was 0.856 (95% CI: 0.776–0.926 (F (20, 1300) = 394.762, P < .001)). Overall Kendall’s w between appraisers was 0.88 (χ² (20 = 1162.34, P < .001).

DISCUSSION
The UK MHTS was found to have substantial levels of interrater reliability. The study participants had minimal previous experience in the use of triage scales, and participants from the Bradford site had received some training in mental health triage, but no formal training in the use
<table>
<thead>
<tr>
<th>Triage Code / description</th>
<th>Response type/time to face-to-face contact</th>
<th>Typical presentations</th>
<th>Mental health service action/response</th>
<th>Additional actions to be considered</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Emergency</td>
<td>IMMEDIATE REFERRAL Emergency service response</td>
<td>Current actions endangering self or others: Overdose / suicide attempt / violent aggression. Possession of a weapon.</td>
<td>Triage clinician to notify ambulance, police and/or fire service.</td>
<td>Keeping caller on line until emergency services arrive / inform others.</td>
</tr>
<tr>
<td><strong>B</strong> Very high risk of imminent harm to self or to others</td>
<td>WITHIN 4 HOURS Very urgent mental health response</td>
<td>Acute suicidal ideation or risk of harm to others with clear plan or means. Ongoing history of self harm or aggression with intent. Very high risk behaviour associated with percutual or thought disturbance, delirium, dementia, or impaired impulse control. Urgent assessment under Mental Health Act. Initial service response to A &amp; E and ‘front of hospital’ ward areas.</td>
<td>Crisis Team/Liaison/face-to-face assessment AND/OR Triage clinician advice to attend a hospital A&amp;E department (where the person requires medical assessment/treatment).</td>
<td>Recruit additional support and collate relevant information.</td>
</tr>
<tr>
<td><strong>C</strong> High risk of harm to self or others and/or high distress, especially in absence of capable supports</td>
<td>WITHIN 24 HOURS Urgent mental health response</td>
<td>Suicidal ideation with no plan or ongoing history of suicidal ideas with possible intent. Rapidly increasing symptoms of psychosis and/or severe mood disorder. High risk behaviour associated with perceptual or thought disturbance, delirium, dementia, or impaired impulse control. Overt / unproven agitation in care home or hospital ward setting. Wandering at night (community). Vulnerable isolation or abuse.</td>
<td>Crisis Team/Liaison/Community Mental Health Team (CMHT) face-to-face assessment</td>
<td>Contact same day with a view to following day review in some cases. Obtain and collate additional relevant information. Point of contact if situation changes.</td>
</tr>
<tr>
<td><strong>D</strong> Moderate risk of harm and/or significant distress</td>
<td>WITHIN 72 HOURS Semi-urgent mental health response</td>
<td>Significant patient / carer distress associated with severe mental illness (but not suicidal). Absent insight / early symptoms of psychosis. Resitive aggression / obstructed care delivery. Wandering (hospital) or during the day (community). Isolation / failing carer or known situation requiring priority intervention or assessment.</td>
<td>Liaison/CMHT face-to-face assessment</td>
<td>Telephone support and advice. Secondary consultation to manage wait period. Point of contact if situation changes.</td>
</tr>
<tr>
<td><strong>E</strong> Low risk of harm in short term or moderate risk with good support/stabilizing factors</td>
<td>WITHIN 4 WEEKS Non-urgent mental health response</td>
<td>Requires specialist mental health assessment but is stable and at low risk of harm during waiting period. Other services able to manage the person until mental health service assessment (+/- telephone advice). Known service user requiring non-urgent review adjustment of treatment or follow-up Referral for diagnosis (see below). Requests for capacity assessment, service access for dementia or service review / carer support.</td>
<td>Out-patient clinic or CMHT face-to-face assessment</td>
<td>Telephone support and advice. Secondary consultation to manage wait period. Point of contact if situation changes.</td>
</tr>
<tr>
<td><strong>F</strong> Referral not requiring face-to-face response from mental health</td>
<td>Referral or advice to contact alternative provider</td>
<td>Other services (outside mental health) more appropriate to current situation or need.</td>
<td>Triage clinician to provide advice, support. Advice to contact other provider and/or phone referral to alternative service provider (with or without formal written referral).</td>
<td>Assist and/or facilitate transfer to alternative service provider.</td>
</tr>
<tr>
<td><strong>G</strong> Advice, consultation, information</td>
<td>Advice or information only OR More information needed</td>
<td>Patient or carer requiring advice or information. Service provider providing information (collateral). Initial notification pending further information or detail.</td>
<td>Triage clinician to provide advice, support, and/or collect further information</td>
<td>Consider courtesy follow up telephone contact.</td>
</tr>
</tbody>
</table>

A & E, accident and emergency; CMHT, community mental health team.
TABLE 2: Sample characteristics

<table>
<thead>
<tr>
<th>Sex</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>45 (68.2)</td>
</tr>
<tr>
<td>Male</td>
<td>21 (31.8)</td>
</tr>
<tr>
<td>Total</td>
<td>66 (100)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Discipline</th>
<th>n ( %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>7 (10.8)</td>
</tr>
<tr>
<td>Nurse</td>
<td>39 (60.0)</td>
</tr>
<tr>
<td>Occupation therapist</td>
<td>3 (4.6)</td>
</tr>
<tr>
<td>Practitioner psychologist</td>
<td>4 (6.2)</td>
</tr>
<tr>
<td>Art therapist</td>
<td>1 (1.5)</td>
</tr>
<tr>
<td>Social worker</td>
<td>11 (16.9)</td>
</tr>
<tr>
<td>Total</td>
<td>65 (100)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Highest qualification</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diploma</td>
<td>3 (4.5)</td>
</tr>
<tr>
<td>Hospital certificate</td>
<td>6 (9.1)</td>
</tr>
<tr>
<td>Masters</td>
<td>12 (18.2)</td>
</tr>
<tr>
<td>Postgraduate certificate or diploma</td>
<td>25 (37.9)</td>
</tr>
<tr>
<td>PhD</td>
<td>1 (1.5)</td>
</tr>
<tr>
<td>Undergraduate degree</td>
<td>19 (28.8)</td>
</tr>
<tr>
<td>Total</td>
<td>66 (100)</td>
</tr>
</tbody>
</table>

Triage scales, other than the 2-hour training session provided immediately before the survey to all participants on the use of the UK MHTS. The majority of participants from the Welsh site had participated in a 2-day mental health triage training programme, and some had between 3 and 9 months’ experience using triage scales. These findings suggest that mental health clinicians from a range of disciplinary backgrounds can use the scale reliably with minimal training and experience in the use of triage scales.

The present study is the first known study to investigate the reliability of mental health triage scales developed and tested in UK mental health triage and crisis services. Previous studies conducted in mental health settings relevant to this project are difficult to compare (Bengelsdorf et al. 1984, Bonynge and Thurber 2008, Myer et al. 1992, Turner and Turner 1991), as no other research has examined the reliability of triage scales with defined service response times and dispositional options spanning the urgency continuum. Another important point of difference between the UK MHTS and previous work undertaken on crisis triage rating scales is relevance to the current health context. Previous related research was undertaken in the 1980s and 1990s when deinstitutionalization was not widespread (Bengelsdorf et al. 1984, Myer et al. 1992, Turner & Turner 1991), limiting dispositional options to hospitalization only, as compared to the range of dispositional options across the urgency continuum contained in the UK MHTS.

Triage scales using defined response times and stratified levels of urgency are used widely in emergency departments, where they have demonstrated good levels of reliability and improved patient outcomes (Australian College for Emergency Medicine 2000, Broadbent et al. 2004, Fitzgerald 1996, Whitby et al. 1997). Triage systems have also been applied successfully in psychiatric settings (Elsom et al. 2013, Grigg et al. 2004, Kevin 2002, McGorry et al. 2013, Sands 2004, Sands et al. 2013b). Australian and New Zealand mental health services have implemented triage systems nationwide, and these services are now integral to providing 24/7 access to mental health assessment, support, and care (Department of Health Victoria 2009, New Zealand Mental Health Commission 2001, Sands 2004). Research investigating perceptions of the accessibility and responsiveness of telephone-based mental health triage services in a small sample of patients and carers reported high levels of satisfaction, and good outcomes on measures related to access and prompt service (Elsom et al. 2013). Telephone-based mental health triage is also effective for the assessment and management of psychiatric emergency, and might also help prevent admission (Sands et al. 2013b). A recent review of the effectiveness of telehealth-delivered mental health services found that mental health to be effective in a wide range of healthcare contexts for assessment and diagnosis across the lifespan, and also effective in increasing access to mental health care (World Health Organization 2008).

No research to date has systematically investigated the safety and quality of using seven-tier triage scales in specialist mental health services. It is unknown whether triage scales in this context provide reliable decision support for risk assessment and management, or the degree to which clinician factors (i.e. years of experience) influence the reliability of triage scales. It is also unknown whether mental health triage scales result in a fair and equitable allocation of health resources, or how resource allocation influences health outcomes, and this requires further investigation. While there are no studies reporting on any adverse outcomes directly associated with the use of mental health triage scales, further research is required to examine the UK MHTS in the clinical context to investigate further the reliability and performance of the scale in terms of safe, consistent, and accurate triage across the spectrum of urgency.

Our study has obvious limitations. The sample was drawn from two health services in Wales and England. Reliability testing was performed using hypothetical scenarios, and further research is required to determine the reliability of the scale in clinical contexts. However, the high level of agreement between raters using a seven-tier scale to assess mental health scenarios representing a broad range of urgency offers encouragement, that this scale will provide important support for mental health clinicians working in settings where rapid, consistent and accurate
decision-making is necessary to ensure optimal deployment of health care services. A triage scale that can be used effectively by multidisciplinary clinicians for initial psychiatric screening offers opportunities for capacity-building initiatives that seek to upscale present workforce capabilities to respond to the escalating demand for mental health and crisis services.

CONCLUSION

Mental health triage systems incorporating reliable triage scales hold promise as a model for mental health care that could build a foundation for a system that offers equivalent standards for access and waiting times, as those expected in physical health care (UK Department of Health 2014). Reliable mental health triage scales employed within effective mental health triage systems offer possibilities for not only improved patient outcomes and experiences, but also for efficient use of finite specialist mental health services. Further research is necessary to investigate the impact on economic and clinical outcomes of the use of the UK MHTS.

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