Clinical, socio-demographic and environmental factors in the Duration of Untreated Psychosis, among patients with First Episode of Psychosis

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Thesis Portfolio Abstract

Background: The concept of duration of untreated psychosis (DUP) is important as it is known to affect treatment outcomes for people with First Episode of Psychosis (FEP). However, previous research is inconsistent in what factors impact DUP. Therefore, the aim of this thesis portfolio was to examine a range of determinants (social, clinical, and environmental) associated with DUP in people with FEP.

Methods: A systematic review was carried out to explore how stigma, social networks, and social support impact DUP for people with FEP. An empirical paper examined which socio-demographic (e.g., age, gender, ethnicity), clinical (mode of onset of psychosis) and environmental (rural-urban status) factors are associated with DUP.

Results: The systematic review synthesised the findings of qualitative and quantitative studies and described how people with FEP who experience internalised stigma, fear that they would be discriminated or labelled by others, and face stigma and fear related to mental health services, have longer treatment delays. In terms of social networks and social support, the findings were heterogeneous. The potential interaction between stigma and social networks was further explored. The empirical paper, adopting a quantitative design, revealed that rural-urban status was not significantly associated with DUP. However, long DUP was associated with an insidious mode of onset of psychosis. There was also no strong evidence that socio-demographic factors such as gender, ethnicity or employment status differed in DUP. However, the results highlighted weak evidence that adolescents and minority ethnic group patients might have longer DUP, but this needs further investigation.

Conclusions: The findings emphasize that there might be multiple, and potentially interacting factors which impact DUP. However, due to limitations of both studies, further

research is required to enable a better understanding of these complex processes. This could inform the development of effective initiatives to reduce DUP.

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Chapter 1: Introduction

The aim of the introduction is to provide an overview of psychosis, early intervention services, duration of untreated psychosis, treatment delays, barriers to accessing care, and environmental factors related to psychosis. The aims of the thesis portfolio and the rationale for both the systematic review and the empirical paper are presented.

Psychosis

Psychosis is described as a heterogeneous mental health condition (Radua et al., 2018), and is characterised by a range of positive symptoms such as delusions, hallucinations, disorganised thoughts/ behaviour, and/or negative symptoms (e.g., loss of motivation, diminished emotional expression) (The Diagnostic Statistical Manual (DSM-V), American Psychiatric Association [APA], 2013). The literature shows that the onset of psychotic symptoms occurs between late adolescence and early adulthood (Murray & Van Os, 1998; Malla et al., 2002). The factors known to contribute to psychosis are varied. Many studies highlight biological theories, stressing the role of genetics (Sullivan et al., 2003), prenatal or perinatal factors (Fatemi & Folsom, 2009) or neuroanatomical abnormalities (Bora et al., 2011). A psychological approach such as a diathesis-stress model proposes that individuals who are biologically vulnerable and experience high levels of psychosocial stress (e.g., trauma) are at higher risk of developing psychotic symptoms (Ackner et al., 2013; Ingram & Luxton, 2005). Moreover, social, and demographic factors such as being a male, an adolescent, or a young adult, unmarried, with low socio-economic status, and being a member of an ethnic minority group have been shown to be linked with increased risk of psychosis (Murray & Castle, 2009; Lenzwenger, 2010; Fearon et al., 2006; Oduola et al., 2019b).

Prevalence rates suggest that one in 150 people worldwide (Moreno-Küstner et al., 2018), and one in 100 people in England, suffer from psychosis, with majority of them experiencing their first episode of psychosis (FEP) before the age of 35 (McManus et al., 2016; Kirkbride et al., 2006). Moreover, psychosis has been ranked as one of the most debilitating mental health disorders (Chong et al., 2016), with a high level of relapse (Robinson et al., 1999), low rates of recovery (Jääskeläinen et al., 2013); and high mortality risk, which is almost double when compared to a general population (Dutta et al., 2012).

Early Intervention Services

Early Intervention (EI) services provide evidence-based treatments and are effective in helping people with FEP in their recovery and reducing their treatment delays (NHS England, 2016b). These services are important as the cost of psychosis has been estimated at £11 billion per year (The Schizophrenia Commission, 2012). EI services can save £4031 per person per year and taking into consideration all clients this could reach approximately £63.3 million per year (Tsiachristas et al., 2016). Therefore, it is essential to offer an effective treatment, as quickly as possible to decrease costs and increase the chances of recovery. NHS England (2016) recommend that each person who accesses an EI service should be provided with an intervention within two-weeks from the referral. This has been an important step to reduce the delays in treatments. However, the aforementioned recommendations were incorporated to reduce delays from the point of referral to the access to treatment. Nevertheless, researchers and clinicians recognise the impact of treatment delays, which are measured beyond the referral point, as such from the onset of psychosis (Marshall et al., 2005).

Duration of Untreated Psychosis

Duration of untreated psychosis (DUP) has been defined as “the time between the onset of psychotic symptoms” and the start of the treatment or first contact with a mental health service (Norman & Malla, 2001, p. 268; Oduola et al., 2020). Therefore, those who access services and receive appropriate support soon after they experience their first psychotic symptoms have shorter time of untreated psychosis. This is important as there is strong evidence that longer DUP is associated with an insidious onset of psychotic symptoms (characterised by gradual way of developing psychosis such as increasing withdrawal), poorer functioning, and worse recovery (Marshall et al., 2005; Perkins et al., 2005). Moreover, a delay exceeding 23 weeks is associated with a high risk of long-term poor outcomes (Cechnicki et al., 2014). Therefore, it is valuable to understand what factors contribute to the length of treatment delays and what are the barriers for people with FEP in seeking appropriate treatment.

What do Care Utilisation Theories Tell Us About Help-seeking Behaviour and Barriers to Treatment?

Understanding barriers in help-seeking is essential to reduce treatment delays (Zartaloudi & Madianos, 2010). Rosenstock (1966) proposed the Health Belief Model, which describes four aspects (‘illness’ severity’, ‘client’s vulnerability’, ‘perceived benefits’, and ‘barriers’) which affect whether a client will make the decision to seek help. This model has been supported in mental health settings. For instance, factors such as clients’ attitudes and beliefs about mental health difficulties, the benefits of receiving care, and social support (O’Connor et al., 2014), and more specifically, the attitudes about psychotic treatments, or stigma related to psychosis experiences play a significant role in help-seeking behaviour and affect treatment participation (Haley et al., 2003; Saravanan et al., 2008). Anderson (1995) developed a Model of Healthcare Utilization, which suggests that there are three main factors influencing an individual's likelihood of help seeking and service use. These include: 'predisposing factors' (e.g., demographic characteristics of a client, his/ her beliefs, attitudes, and values), 'enabling factors' (e.g., community resources, availability, and accessibility of the service), and 'the need' that a person has to use a service. This is supported by a survey, which examined data from the World Health Organisation, and revealed that a low perceived need that a person has, a negative attitude, and factors such as poor finances and resources are a few of the main barriers to seeking help (Andrade et al., 2013).

Rural-Urban Areas: Does it Matter Where You Live?

The Office for National Statistics (ONS, 2011) estimated that 82.4 and 17.6 percent of people in England live in urban and rural areas respectively. ONS (2011) developed a rural-urban classification in England and Wales, based on the population density. However, the question is whether the geographical area (where people live) is important in relation to psychosis. First, there is strong evidence that people living in urban environments are at greater risk developing psychosis (March et al., 2008; Sundquist et al., 2004; Tandom, Keshavan & Nasrallah, 2008; Vassos et al., 2012). Those who live in urban areas, are more likely to experience higher levels of stress (e.g., due to social and economic stressors) and to be exposed to socio-environmental factors such as social isolation or discrimination (Radua et al., 2018; Fett et al., 2019). Deprivation, social fragmentation, and inequality are also found to be contributing factors in developing psychosis (Burns & Esterhuizen, 2008; Richardson et al., 2018). Second, the area where people live might also affect whether people would seek help. People who live in rural areas face difficulties with accessing mental health services; this could be due to travel distance and cost (Nicholson, 2008; Jordan et al., 2004). Moreover, EI services that provide a specialist care, have to take into consideration multiple factors such as costs of delivering services, maintenance and collaborations with the primary services located in the rural areas, and cultural differences (e.g., stigma), which make the delivery of the services in rural areas more complex (Kelly et al., 2007). However, the literature which examines the geographical variation in DUP is limited in the UK context.

Rationale and Aims of the Thesis Portfolio

In general, the literature shows that it is beneficial (clinically and economically) to reduce treatment delays for people with FEP. Therefore, there is a need to provide more effective strategies to do so. A systematic review conducted by Lloyd-Evans et al. (2011) revealed that it is not enough to provide early intervention services to reduce DUP, and there is a need for more complex initiatives. Therefore, examining determinants of DUP, could potentially help with directing and allocating appropriate resources to minimise the time of untreated psychosis. However, research that examines individual and environmental factors which contribute to longer DUP is still limited and inconsistent due to challenges in reliably determining the onset of psychotic symptoms (Norman & Malla, 2001).

This thesis portfolio consists of six chapters, including an introduction, a systematic review, bridging chapter, an empirical paper, additional methodology and discussion and critical evaluation. The aims of the systematic review were first, to examine the concept of DUP (e.g., to explore how the literature conceptualises and measures DUP), and second, to explore a range of social determinants (stigma and social networks/ social support) of DUP. The aims of the empirical paper were to examine which socio-demographic (e.g., gender, age, ethnicity, education level, living circumstances and relationship status), clinical (a mode of onset of psychosis) and environmental (rural-urban area) factors are associated with DUP. Therefore, this portfolio will provide a holistic picture of which factors contribute to DUP, which potentially could help services in reducing treatment delays and improve outcomes for people with FEP.

Chapter 2: Systematic review

Social determinants of duration of untreated psychosis in first episode psychosis: a systematic review

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Abstract

Aims: Duration of untreated psychosis (DUP) is found to be a predictor of poorer treatment outcomes. Understanding factors which impact DUP, could potentially reduce the delays in receiving the treatment, and increase the chances of better prognosis for people with first episode of psychosis (FEP). The review aimed to investigate the role of stigma and social networks/social support in DUP for people with FEP.

Methods: Thirty studies were identified though EMBASE, MEDLINE Complete, PsychInfo and the CINAHL Complete databases. The review included qualitative and quantitative studies, published in English, which explored stigma and social networks, social support, and DUP.

Results: The synthesis revealed a role of stigma in long treatment delays, but a heterogenous findings regarding social networks/social support. The findings describe some preliminary links between determinants and highlight the diverse use of those constructs along with DUP, across the studies.

Conclusion: To develop interventions directed towards reducing DUP more effectively, further research is needed to explore a wider range of determinants and possible processes between them. As the findings of this review point out a preliminary role of stigma and social networks in DUP, it might be suggested that the community-based interventions could be beneficial; however, further research is warranted.

Keywords: first episode of psychosis, duration of untreated psychosis, stigma, social networks, social support

Introduction

Psychosis is a severe mental health difficulty, experienced by an estimated 0.7 % of adults (McManus et al., 2016). Psychosis can have a significant negative effect on people's personal and social life, education, and occupation (Fusar-Poli et al., 2017). Early Intervention (EI) services were developed to support those experiencing first episode of psychosis (FEP) (Birchwood, 1995). These services are essential to increase the detection of symptoms and to provide quick, effective, and efficient treatment (Marshall & Rathbone, 2011). The systematic review conducted by Bird et al. (2010) showed that EI services improve clients' outcomes, reduce symptoms, number of hospital admissions and the risk of relapse.

Duration of Untreated Psychosis (DUP)

People with FEP often experience delays in treatment, known as duration of untreated psychosis (DUP). It is defined as the delay in treatment (deHaan et al., 2002), or more specifically, as the time between the onset of psychosis and access to appropriate care and/or the initiation of treatment (Marshall et al., 2005; Compton et al., 2011; Ruiz-Veguilla et al., 2012). There is a large body of literature which has investigated the consequences of DUP (Penttila et al., 2014). A meta-analysis revealed that longer DUP is associated with poorer outcomes and prognosis at six and 12 months, including overall functioning, quality of life, symptom severity, and cognitive impairment (Marshall et al., 2005). However, Perkins et al. (2005) suggest that DUP can be perceived as a "potentially modifiable prognostic factor" (p. 1785); therefore, understanding determinants that may contribute to the length of treatment delays, could potentially reduce DUP, and consequently improve the outcome for people with FEP (Wyatt & Henter, 2001).

Therefore, this review will focus on the role of two potential social determinants of DUP: stigma and social networks/social support.

Stigma

Stigma is a broad and complex concept, which was originally defined by Goffman (1963) as “a trait that is deeply discrediting” (Gray, 2002, p. 72). Later, stigma was reconceptualised to include direct and indirect social interactions, other’s negative perceptions, reactions, and attitudes towards another person; prejudice, discrimination, stereotyping and labelling (Brohan et al., 2010; Gray, 2002; Link & Phelan, 2001). Corrigan and Watson (2002) categorised stigma into two types: ‘public stigma’, which is defined as stigma from others towards the person who suffers from mental health difficulties; and ‘self-stigma’, defined as internalised stigma which is rooted in an individual’s views and beliefs.

Negative and stigmatising perception of people with mental illness is prevalent (Crisp et al., 2005). People with psychosis often experience self-stigma, are discriminated against, excluded, and marginalised due to their psychotic experiences (Burke et al., 2016). The literature suggests that stigma prevents people from accessing care and adhering to a treatment (Fung et al., 2008); and can lead to poorer outcome (Colizzi et al., 2020). People with mental health difficulties may not seek help to avoid being labelled, which can lead to personal and social consequences such as a low self-esteem or being discriminated against in the community (e.g., not being able to get a job or housing) (Corrigan, 2004). Therefore, a better understanding of how stigma affects DUP could be beneficial to reduce delays in providing effective treatment and, consequently, improve the outcome.

Social Support

A lack of poor social networks also might explain why people with mental health difficulties do not seek help, potentially resulting in longer DUP. Social network is a multidimensional concept, which is defined as structure or ties of social relationships (this includes: dyadic relationships or a whole network), and serves multiple functions (e.g., social support, social influence, social undermining) (Ferlender, 2007; Heaney & Israel, 2008). Social networks and social support have a positive impact on physical and mental well-being (Berkaman & Glass, 2000), and on an individual’s ability to cope with environmental stressors (Sias & Bartoo, 2007). People with psychosis who have supportive social networks show better functioning (Evert et al., 2003; Howard et al., 2000) and recovery (El-Monshed & Amr, 2020). However, the literature shows that people who suffer with mental health difficulties (Albert et al. 1998), and more specifically those with psychosis (Macdonald et al., 2000) have smaller social networks and social support than the general population. Moreover, people who experience psychosis often isolate themselves from others and have difficulties in maintaining social relationships (Macdonald et al., 2005). However, the literature presents a mixed picture of the role of social support in treatment delays; some state that having strong social support might delay help seeking (Thoits, 2011). Conversely, other research suggests that a lack of support and encouragement from others may be a barrier to accessing treatment (Anderson et al., 2013).

As DUP can have significant consequences, it is important to understand the factors which could lead to treatment delays. To the researcher’s knowledge there is no review which focuses on stigma, social networks/social support, and DUP in a FEP population, and which includes studies with all methodological designs (quantitative, qualitative, and mixed methods). Gronholm et al. (2017) conducted a mixed-method systematic review and explored how stigma and its processes such as “sense of difference” or “lack of knowledge and understanding” impact on pathways into care for people with FEP and those at-risk of developing psychosis (p. 1867). The Gronholm et al. (2017) review provided a guide for the current systematic review in terms of methodology. However, the review included a broad definition of pathways to care (e.g., help-seeking, contact with services), explored solely stigma, and excluded participants who were over 40 years old. The current review aimed to extend the aforementioned review in three key ways: (1) to focus on DUP, rather than pathways into care; (2) to extend the focus of the review to social networks as well as stigma; and (3) to increase the age range of people with FEP, which is in line with changes to EI service provision to accept clients of all ages (NHS England, 2016). This systematic review aimed to describe and understand a broader range of social determinants (e.g., stigma, social network/social support) and DUP, and to examine how DUP is measured in people with FEP.

Review Question:

What is the impact[1] of social determinants on duration of untreated psychosis (DUP) for people with first episode of psychosis?

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[1] When referring to ‘impact’, the current systematic review explores stigma and social networks/social support, which affect the length of DUP, including both qualitative and quantitative studies.

Methods

Search Strategy

The search strategy was carried out using EMBASE, MEDLINE Complete, PsychInfo and the CINAHL Complete. The search was based on four major concepts: ‘stigma’; ‘social networks/social support’, ‘duration of untreated psychosis’ and ‘first episode psychosis’. The following search terms were used (‘stigma*’ OR ‘prejudice*’ OR ‘discrimination’ OR ‘stereotyp*’) OR (‘social support’ OR ‘social exclusion’ OR ‘family’ OR ‘social contact’) AND (‘duration of untreated psychosis’ OR ‘treatment delay*’ OR ‘help seeking behaviour’ OR ‘therapy delay’) AND (‘first episode psycho*’OR ‘psychos*’ OR ‘psychot*’ OR ‘delus*’). The search terms were developed and partially based on a published systematic review on pathways to care conducted by Gronholm et al. (2017). In May 2021, a second thorough search was carried out along with checking the references of all included articles to ensure all up to date articles were included. A comprehensive list of search terms is included in Appendix B. The protocol was registered and published on the International Prospective Register of Systematic Reviews website (PROSPERO; https://www.crd.york.ac.uk/PROSPERO/display_record.php?RecordID=203749) (Registration number: CRD42021203749).

The primary researcher conducted the initial search and screened articles against the inclusion and exclusion criteria by the titles and abstracts. This was repeated by reviewing the full-text articles. The PRISMA flowchart was used to record all excluded articles (see Figure 1). A second reviewer was involved in co-screening articles at the title, abstract and full-text level. Discrepancies were resolved by SO and JH.

Inclusion Criteria

Studies were included if the sample population was identified as people with first episode of psychosis (this included those who experienced symptoms of psychosis, or psychotic-like symptoms for the first time; and those who had their first admission to the service due to experienced psychosis). There was no restriction on the age of participants. The DUP was defined as the delay or time between the onset of the first symptoms of psychosis and the start of the treatment or first contact with a service. This also included concepts such as treatment delays, barrier to accessing the treatment etc. Stigma was defined as a concept of stigma such as prejudice, stereotyping, attitude, embarrassment, discrimination. Social networks/social support was defined as any variation of social support or social networks (this included the quality and quantity of social contacts). This review included all methodological designs (qualitative, quantitative, and mixed methods). Studies were also included if it was possible to distinguish views or perspectives between people with FEP and others (e.g., carers); or when others (e.g., carers) were involved as informants.

Exclusion Criteria

Studies were excluded if they did not have full text in English; were systematic reviews, meta-analysis, letters, symposiums, posters, protocols, or any articles which were not data-based. Moreover, studies which measured the duration of untreated illness related to any mental health illness (broader than psychosis) were also excluded from this review.

Quality Assessment

The primary researcher completed the quality assessment using the Mixed Methods Appraisal Tool (MMAT, Hong et al., 2018), prior to the analysis, in keeping with guidance

(Popay et al., 2006). MMAT is an appraisal tool that enables the assessment of quality rating on quantitative, qualitative, and mixed-method studies. It consists of two main screening questions, and an additional five questions, which are specifically adapted to each type of a research design. The quality rating scoring was based on the system used by previous studies (Gronholm et al., 2017; Allan et al., 2020). The primary researcher conducted a quality rating assessment of all included papers. A second reviewer independently co-rated 20% of the articles. A Cohen's kappa $\kappa = .79$ ($p < .01$) showed a good inter-rater reliability. Any discrepancies were resolved by SO and JH.

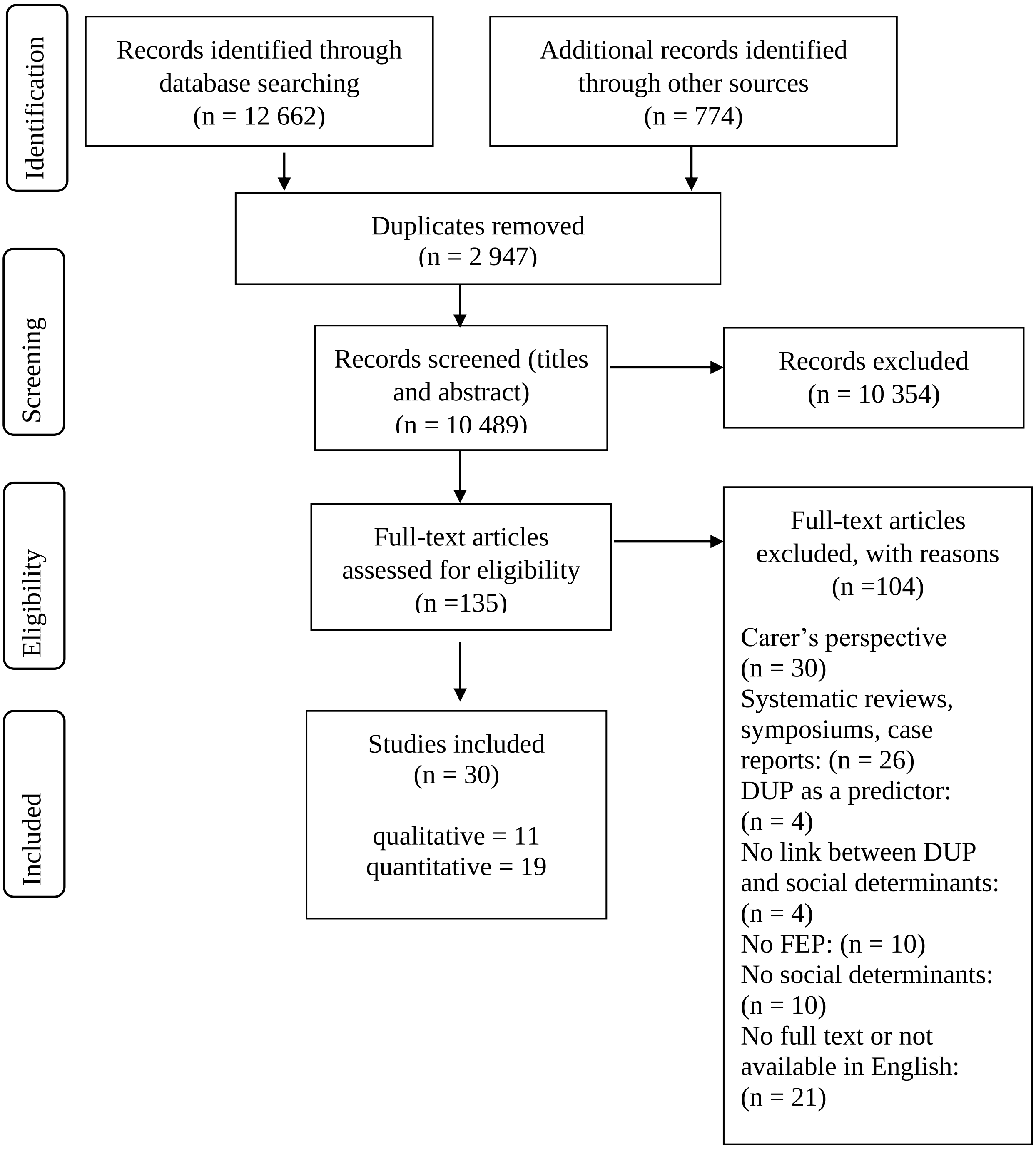
Data Extraction, Analysis, and Synthesis

As both quantitative and qualitative studies were available to answer the research question posed by the review, a mixed methods approach was adopted. Mixed methods systematic reviews allow the combination of diverse forms of evidence and are highlighted as useful in answering research questions that call for real-life contextual understanding and multi-level perspectives (Pearson et al., 2015). The current systematic review took a critical-realist stance. This approach assumes that there is an objective reality but that perceptions of this are mediated by individual and societal factors. It has also been described as a useful stance for mixed-methods studies as quantitative methods allow "to develop reliable descriptions and provide accurate comparisons", whereas qualitative methods allow for further exploration of more complex processes (McEvoy & Richards, 2006, p.71). Data were extracted from all included qualitative and quantitative articles using an Excel spreadsheet. For quantitative studies, this consisted of characteristics of DUP, outcome measures of stigma and social networks (Table 1, 2) and participants' characteristics (e.g., age), (Tables 3, 4). For qualitative studies, as well as participants' characteristics, the quotations used in the papers and the author interpretations of those quotations were also extracted. A narrative synthesis (Popay et al., 2006) was used to analyse quantitative data. This included conducting a preliminary synthesis (identifying patterns regarding stigma, social network/social support, and DUP), exploring the relationships between those findings across the studies, and describing them using a textual approach. The thematic analysis (Braun & Clarke, 2007) was used to identify codes, and further key themes across qualitative studies (Popay et al., 2006). A mixed-method synthesis using a segregated approach was conducted (Sandelowski et al., 2006). Quantitative and qualitative studies were considered separately before being merged. This involved exploring both qualitative and quantitative syntheses and looking for similarities and differences across the findings. Therefore, the findings for both qualitative and quantitative studies could support, contrast and/or add to each other (Pearson et al., 2015). This also allowed for the key themes to be combined and/or further developed. Moreover, as outlined by Gronholm et al. (2017), links between the themes identified from the included studies were also illustrated in the final synthesis. The coherent synthesis of the findings, the overall themes, and the links between them, are presented visually in Figure 2. The illustrative qualitative citations were selected to represent overall themes and are provided in the result section.

Figure 1

PRISMA Flowchart

Adapted from Moher et al. (2009)



Results

Study Characteristics

This review included 11 qualitative studies and 19 quantitative studies, which examined social determinants and DUP. In terms of social determinants, six studies (five qualitative and one quantitative) explored both stigma and social networks/social support (Ferrari et al., 2015; Anderson et al., 2013; Jansen et al., 2015; Jansen et al., 2018; Tanskanen et al., 2011; de Haan et al., 2002). Eight studies (five qualitative studies and three quantitative) explored stigma (Harris et al., 2012, Bay et al., 2016; Boydell et al., 2006; Judge et al., 2008; Yarborough et al., 2019, Kular et al., 2019; Mueser et al., 2020; Thakoor et al., 2016) and 16 studies (one qualitative and 15 quantitative) explored social network/social support (Cadario et al., 2012, Bhui et al., 2014; Burns & Kirkbride, 2012; Carra et al., 2018; Compton et al., 2011; Drake et al., 2000; Elshestawy et al., 2015; Kalla et al., 2002; Larsen et al., 1998; Melle et al., 2005; Norman et al., 2007; Peralta et al., 2005; Reinninghaus et al., 2008; Renwick et al., 2017; Ruiz-Veguilla et al., 2012; Sundermann et al., 2014). The total number of participants across studies was 156 and 3151 for qualitative and quantitative studies, respectively. The summary of characteristics of each study is included in Tables 3 and 4.

The MMAT quality rating findings revealed that the quality of the qualitative studies was generally good. Only one study scored 57.14 percent, with the remaining qualitative studies scoring above 70% on the MMAT. In terms of quantitative studies, the quality varied and ranged from 42.85 percent (indicating poor quality) to 85.71 percent (indicating good quality), with 9 studies scoring above 70%. (For more information on quality appraisal see Appendix A).

Duration of Untreated Psychosis Characteristics

The characteristics of DUP for both qualitative and quantitative studies are presented in Tables 1 and 2. Most of the quantitative studies calculated DUP from the onset of psychotic symptoms. However, the end point of DUP varied across all studies, this included a broader definition of accessing ‘appropriate treatment’ which could include access to services, to more specified endpoint such as ‘initiation of antipsychotic medication’. DUP was mostly measured using interviews, medical records, with some studies using more standardised scale to assess symptoms of psychosis such as Personal and Psychiatric History Schedule (PANSS, Kay et al., 1987) or The Nottingham onset schedule (Singh et al., 2005). Across all studies, the median DUP ranged from five weeks to two years. Three quantitative studies did not report on DUP median or mean (de Haan et al., 2002; Thakoor et al., 2016; Reininghaus et al., 2008). Four qualitative studies directly discussed DUP (Bay et al., 2016; Ferrari et al., 2015; Tanskanen et al., 2011); however, only one defined it as the time between the start of psychotic symptoms and start of antipsychotic medication (Judge et al., 2008). Other qualitative studies used more general definitions such as barriers to accessing appropriate treatment for psychosis (Jansen et al., 2015). Seven quantitative studies and two qualitative studies dichotomised DUP into short and long (de Haan et al., 2002; Thakoor et al., 2016; Elshestawy et al., 2015; Kular et al., 2019; Larsen et al., 1998; Mueser et al., 2020; Peralta et al., 2005; Bay et al., 2016; Tanskanen et al., 2011).

Stigma and Social Networks/Social Support Instruments Characteristics

The instruments used to assess stigma and social network/social support varied across the studies. Most of the studies on stigma explored the construct through interviews. Two quantitative studies (Kular et al., 2019; Mueser et al., 2020) used the Stigma Scale

(King et al., 2007), while Thakoor et al. (2016) used the Questionnaire based on the Internalised Stigma of Mental Illness Scale (Ritsher et al., 2003). There was variability in how studies measured social networks/social support including semi-structured interviews, more informal interviews to assess the number of close relationships, to more structured outcome measures such as The Social Network Schedule (Dunn et al., 1990). For more information on included studies and characteristics of the instruments please see Tables[2] 3 and 4.

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[2] To keep with the recommendations of Clinical Psychology Review, all tables, which include characteristics of the studies, will be included in the Appendices for the journal submission. The margin will be also removed, which will decrease the overall number of pages.

Table 1

Characteristics of Quantitative Studies

Author, Year, Country	N	Mean age (SD)	Gender Males %	Ethnicity	Stigma: Outcome measure	SN/ Social support: Outcome measure	MMAT score (%)
Bhui et al., 2014 UK	480	Range: 166=<25 159>25-32 155=>32	61.25	36.9%=White 33.3%=Black 23.7%=Asian 6%=other	Not investigated	The number of close people	57.14
Burns & Kirkbride, 2012 South Africa	54	Men: median= 21.5 Women: median =26.5	70	85%=Zulu (Black)	Not investigated	The Social Capital Questionnaire (SCQ) (Bullen & Onyx, 2005) (e.g., neighbourhood connections)	85.71
Carra et al., 2018 UK	122	24.2 (4.2)	67.2	41%=White 38%=Black 9%=Asian 12%=Other	Not investigated	The Social Network Schedule (Dunn et al., 1990).	57.14
Compton et al., 2011 USA	109	23.1 (4.7)	76.1	89.9%= Black 6.4%=White 3.6%=Other	Not investigated	The Social Functioning Scale (Birchwood et al., 1990)	71.43
de Haan et al., 2002 Netherlands	56	19.9	85.7	Not reported	Interview, description	Interview, description	85.71

Author, Year, Country	N	Mean age (SD)	Gender Males %	Ethnicity	Stigma: Outcome measure	SN/ Social support: Outcome measure	MMAT score (%)
Drake et al., 2000 UK	248	Median=27.4 (16-64 years old)	70%	87%=White 8%= African Caribbean 4%= Other	Not investigated	The Social Functioning Scale (Birchwood et al., 1990)	85.71
Elshestawy et al., 2015 Egypt	90	23.63 (3.47)	64.4%	Not reported	Not investigated	Multidimensional Scale of Perceived social Support (Zimet et al., 1990)	42.85
Kalla et al., 2002 Finland	86	F: 27.7 (6.7) S: 27.5 (6.5)	F: 47% S: 51%	57%= Finish 43%=Spanish	Not investigated	A standardised semi-structure questionnaire	57.14
Kular et al., 2019 UK	89	23.2 (5.2)	72	32%=White	The Stigma Scale (King et al., 2007)	Not investigated	57.14
Larsen et al., 1998 Norway	34	27.4 (8.6)	24	Not reported	Not investigated	PAS general section and the Strauss-Carpenter scale (Strauss & Carpenter, 1974)	28.58

Author, Year, Country	N	Mean age (SD)	Gender Males %	Ethnicity	Stigma: Outcome measure	SN/ Social support: Outcome measure	MMAT score (%)
Melle et al., 2005 Norway	281	No ED= 31.1 (10.5) ED=26.2 (7.6)	No ED= 66% ED area 62%	No ED =88% - Scandinavian ED= 98% Scandinavian	Not investigated	L-Quality of Life Objective (e.g., objective social contacts) (Lehman, 1988)	57.14
Mueser et al., 2020 USA	399	23.12 (5.05)	72.2	18.3 %=Hispanic or Latino 81.3%= Not Hispanic or Latino	The Stigma Scale (King et al., 2007)	Not investigated	71.43
Norman et al., 2007 Canada	122	23.1 (8.1)	77%	Not reported	Not investigated	The Wisconsin Quality of Life Scale (e.g., support from family and friends)	42.85
Peralta et al., 2005 Spain	100	24.9 (9.3)	44%	Not reported	Not investigated	The Social Support Index (Sturtees, 1980)	85.71

Author, Year, Country	N	Mean age (SD)	Gender Males %	Ethnicity	Stigma: Outcome measure	SN/ Social support: Outcome measure	MMAT score (%)
Reininghaus et al., 2008 UK	224	16–64 years	54.5	50.4%=White British 26.3%=African Caribbean 10.7%=Black African 4.9%=White Other 2.2%=Others	Not investigated	The Employment Schedule (e.g., time spent with significant others)	71.43
Renwick et al., 2017 Ireland	222	33.3 (11.9)	58.1	Not reported	Not investigated	The Wisconsin Quality of Life Index for Clients (Becker et al., 1993	71.43
Ruiz-Veguilla et al., 2012 Spain	97	30.7 (9.1)	56%	Not reported	Not Investigated	The Social Support Index (Surtees, 1980)	71.43
Sundermann et al., 2014 UK	38	32.3 (9.6)	60.05	52.6%=White 34.2%=Black 13.3%=Other	Not investigated	Time Budget measure (e.g., social functioning); The Multidimensional Support Scale	57.14

Author, Year, Country	N	Mean age (SD)	Gender Males %	Ethnicity	Stigma: Outcome measure	SN/ Social support: Outcome measure	MMAT score (%)
Thakoor et al., 2016 USA	300	C: 24.8 (8.1) M: 40.0 (12.8)	Chinese: 42% Mauritius; 42%	66.7%=Changsha 33.3%=Mauritius	Questionnaire based on the Internalised Stigma of Mental Illness Scale. (Ritsher et al., 2003)	Not Investigated	57.14

Table 2

Characteristics of Qualitative Studies

Author, Year, Country	N	Age Mean	Gender Male %	Ethnicity %	Stigma: Instrument	SN/ Social support: Instrument	MMAT score (%)
Anderson et al., 2013 Canada	16	Mean= 22.5 (20-24 years old)	75%	75% - Canadian 25% - Other	Semi-structured interviews	Semi-structured interviews	71.43
Bay et al., 2016 Norway	8	Range: 17-44 years old	50%	Not reported	In-depth individual interviews	Not investigated	85.71
Boydell et al., 2006 Canada	8	20.5 (2.82)	87.5%	Not reported	In-depth interviews	Not investigated	57.14
Cadario et al., 2012 New Zealand	12	Range: 15-18 years old	58.3%	58.33% - New Zealand European 33.33% - NZ Maori 8.33% - NZ Maori/Cook Island Maori	Not investigated	Unstructured and semi-structured interviews	71.43
Ferrari et al., 2015 Canada	25	Not reported	52%	64% - European 20% - African 16% - Caribbean	Focus groups and additional individual interviews	Focus groups and additional individual interviews	100
Harris et al., 2012 UK	8	Range: 21-37 years old	62.5%	62.5% - White British 25% - White and Asian	Semi-structured interviews	Not investigated	100

Author, Year, Country	N	Age Mean	Gender Male %	Ethnicity %	Stigma: Instrument	SN/ Social support: Instrument	MMAT score (%)
				12.5% - White and Black Caribbean			
Jansen et al., 2015 Denmark	11	Median= 20, range 15–24 years old	54.5%	100% - Danish background	Semi-structured interviews	Semi-structured interviews	71.43
Jansen et al., 2018 Denmark	10	Median age 21, range 18–27 years old	50%	100% - Danish background	In-depth interviews	In-depth interviews	85.71
Judge et al., 2008 USA	15	24.4 (5.28)	53%	80% - Caucasian 13% - African American 7% - Asian	Semi-structured interviews	Not investigated	71.43
Tanskanen et al., 2011 UK	21	26.5 (5.07)	71.4%	14.3%- White British 19% - White Other 14.3%- Black African 23.8% - Black Caribbean 19% - Asian Bangladeshi 9.5% - Mixed Race	Semi-structured interviews	Semi-structured interviews	71.43
Yarborough et al., 2019 USA	22	Mean= 21.6 (3.4)	50%	64% - White 14% - Hispanic 8% - Asian/Pacific islander 4% - Black	Individual interviews	Not investigated	71.43

Stigma and Delays in Treatment

Two quantitative studies, with acceptable quality, and a descriptive quantitative study, with a high-quality rating, found that people who experienced stigma (e.g., prejudice, discrimination, shame) had longer DUP (Mueser et al., 2020; Kular et al., 2019; de Haan, 2002). This supports the findings reported by ten qualitative studies, which further explored the role of stigma in people with FEP and reported on a range of ways in which stigma might affect DUP. Three themes were identified and are outlined below. See Figure 2 for visual representation of relationship between stigma and DUP.

Internalised Stigma- Embarrassment, Sense of Failure, and Guilt

Five qualitative studies explored internalised stigma described as shame, embarrassment, self-judgment, guilt, sense of humiliation and sense of failure. People with FEP, who experience internalised stigma, often avoid or are hesitant to reveal their psychotic symptoms to others which consequently results in longer treatment delays (Jansen et al., 2015; Boydell et al., 2006; Ferrari et al., 2015; Harris et al., 2012; Anderson et al., 2013). Moreover, four studies further discussed how internalised stigma is shaped through societal beliefs and preconceptions about psychosis, described as ‘a taboo illness’ (Harris et al., 2012; Ferrari et al., 2015; Anderson et al., 2013; Jansen et al., 2015).

“P8: . . . I had psychosis, so I didn’t like that. I mean depression’s fine with me, but having psychosis isn’t. . . to me it means that it’s something whacky and totally . . . serious and . . . well . . . I’m just ashamed of it really . . .” (Harris et al., 2012, p. 460).

‘Horror-like’ Mental Health Services and the Role of Fear

Five studies investigated how stigma towards mental health services impact on the time of untreated psychosis (Jansen et al., 2018; Harris et al., 2012; Tanskanen et al., 2011;

Anderson et al., 2013; Judge et al., 2018). People with FEP hold pre-existing beliefs and images of mental health services as ‘horror-like’ (Jansen et al., 2018), which leads to fear of utilising the service, being deprived; for instance, from control, being labelled, perceived as different and not accepted by others, which prevent people from seeking help (Harris et al., 2012; Tanskanen et al., 2011; Jansen et al., 2018; Judge et al., 2008).

“I was certain that I would be admitted and not let out again . . . and get a straight-jacket and a box over my head or things like that. I had imagined a madhouse” (Jansen et al., 2018, p. 172).

Fear of Being Discriminated and Stigmatised by Others and Avoidance-Type Behaviours

Nine studies investigated how the fear of being discriminated by others became a barrier in accessing the treatment (Harris et al., 2012; Ferrari et al., 2015; Bay et al., 2016; Boydell et al., 2006; Jansen et al., 2015; Jansen et al., 2018; Judge et al., 2008; Tanskanen et al., 2011, Yarborough et al., 2018). Participants with FEP adopt a range of avoidance-type behaviours (e.g., hiding, avoiding, ignoring the symptoms, normalising the experience, or isolating oneself), or they become tentative to tell about their psychotic symptoms to others, due to fear of being judged, labelled, stigmatised, misunderstood (Harris et al., 2012; Ferrari et al., 2015; Bay et al., 2016; Boydell et al., 2006; Judge et al., 2008; Yarborough et al., 2008; Jansen et al., 2018; Jansen et al., 2015; Tanskanen et al., 2011).

“I don't want somebody to think I'm crazy. And so I just didn't tell anybody” (Yarborough et al., 2018, p. 1222)

Social Networks/ Social Support

Eight quantitative studies highlighted a mixed picture on the role of social networks/social support in DUP. Larsen et al. (1998) and Drake et al. (2000) found that poor social networks and poor social relationships were associated with longer DUP. This is in line with four studies in which shorter DUP was found to be associated with strong social networks (Kalla et al., 2002; Renwick et al., 2017) and better social support (Elsheshtawy et al., 2015; Norman et al., 2007). However, only the study conducted by Renwick et al. (2017) scored a good quality rating. In contrast, two quantitative studies, characterised by high quality ratings, did not find a significant association between close social networks (e.g., confidants) and DUP (Peralta et al., 2005; Ruiz-Veguilla, 2012). See Figure 2 for visual representation of relationship between social networks/social support and DUP.

The Quantity of Close Social Networks/ Social Support

Eight quantitative studies investigated the relationship between the quantity of close social networks and treatment delays. Seven studies revealed that people with FEP who had a higher number of close social networks (e.g., family, confidants) had shorter DUP (Bhui et al., 2014; Carra et al., 2018; Larsen et al., 1998; Renwick et al., 2017; Melle et al., 2005; Kalla et al., 2002; Reininghaus et al.,2008). Only the study conducted by Sundermann et al. (2014), with a low-quality rating and high risk of bias, did not find the significant relationship between number of confidants and DUP.

The Quality of Close Social Networks

A high quality of close social networks (e.g., good communication, social involvement, availability, and satisfaction with the support provided by friends and family) was associated with shorter DUP (Compton et al., 2011; Sundermann et al., 2014).

However, Burns and Kirkbride (2012) did not find any association between good connections with family or friends and DUP.

The Type and The Role of Social Networks

Family

A mixed picture of the quality and the role of family members was investigated in six qualitative studies, which are characterised by high quality ratings (Jansen et al., 2018; Jansen et al., 2015; Tanskanen, 2011; Ferrari et al., 2015; Anderson et al., 2013; Cadario et al., 2012) and one quantitative study (Kalla et al., 2002). All qualitative studies stressed the supportive and considerate role of families (e.g., those who provide encouragement and assist in initiating help) (Anderson et al., 2013; Jansen et al., 2018; Cadario et al., 2012). However, three qualitative studies and one quantitative study also highlighted an inefficient role of families. This includes a lack of availability (Ferrari et al., 2015), lack of knowledge about psychosis (Jansen et al., 2015), minimising or not recognising symptoms, or parental criticism (Tanskanen et al., 2011; Kalla et al., 2002), that can withhold people with FEP receiving adequate treatment.

“They’ve just been there the whole time, they don’t really have to do much, they’ve just been there” (Jansen et al., 2018, p. 172)
“I told my parents finally, because it was getting too much, and then they didn’t believe me” (Jansen et al., 2015, p. 88)

Friendships and Romantic Relationships

Two studies, with low quality ratings, revealed that uncertainties in romantic relationships, and a fear that the romantic relationship could end if the psychotic experiences were disclosed, predicted longer DUP (Kalla et al., 2002; Thakoor et al., 2016).

In terms of friendships, a qualitative study conducted by Jansen et al. (2015) revealed that friends were perceived as a safe place and a first contact to disclose psychotic experiences, which help patients with FEP to seek and attend appropriate services.

"… my old friend had the diagnosis (schizophrenia) and … I knew what kind of symptoms she had and … I had talked to her psychiatrist … because I felt the same way as her … and she said I should go see a GP and get it checked" (Jansen et al., 2015, p. 88)

Communities

Three quantitative studies (Peralta et al., 2005, Ruiz-Veguilla et al., 2012; Burns & Kirkbride, 2012) and three qualitative studies (Anderson et al., 2013; Tanskanen et al., 2011; Cadario et al., 2012) reported a mixed picture on the role of communities (such as neighbours, school, work, leisure groups, religious groups) in predicting DUP. All the studies were characterised by good quality ratings, indicating that the findings were at a low risk of bias. Two qualitative studies highlighted 'a positive role of communities' (e.g., work colleagues, teachers); this included, noticing psychotic symptoms, directing, and encouraging people with FEP to seek help (Anderson et al., 2013; Cadario et al., 2012). In contrast, longer DUP was predicted by poor community support (Ruiz-Veguilla et al., 2012), and poor work and academic relationships (Peralta et al., 2005). This was supported by a qualitative study, which showed that some organisations were perceived as unapproachable (e.g., often ignore, or do not recognise psychotic symptoms), which led to longer time of untreated psychosis (Tanskanen et al., 2011). In turn, Burns and Kirkbride (2012) reported contrasting findings revealing that people who experienced good neighbourhood connections had longer DUP.

“If there was no psychoeducator in my school, I don't know where I might have ended up”. (Anderson et al., 2013, p. 390)

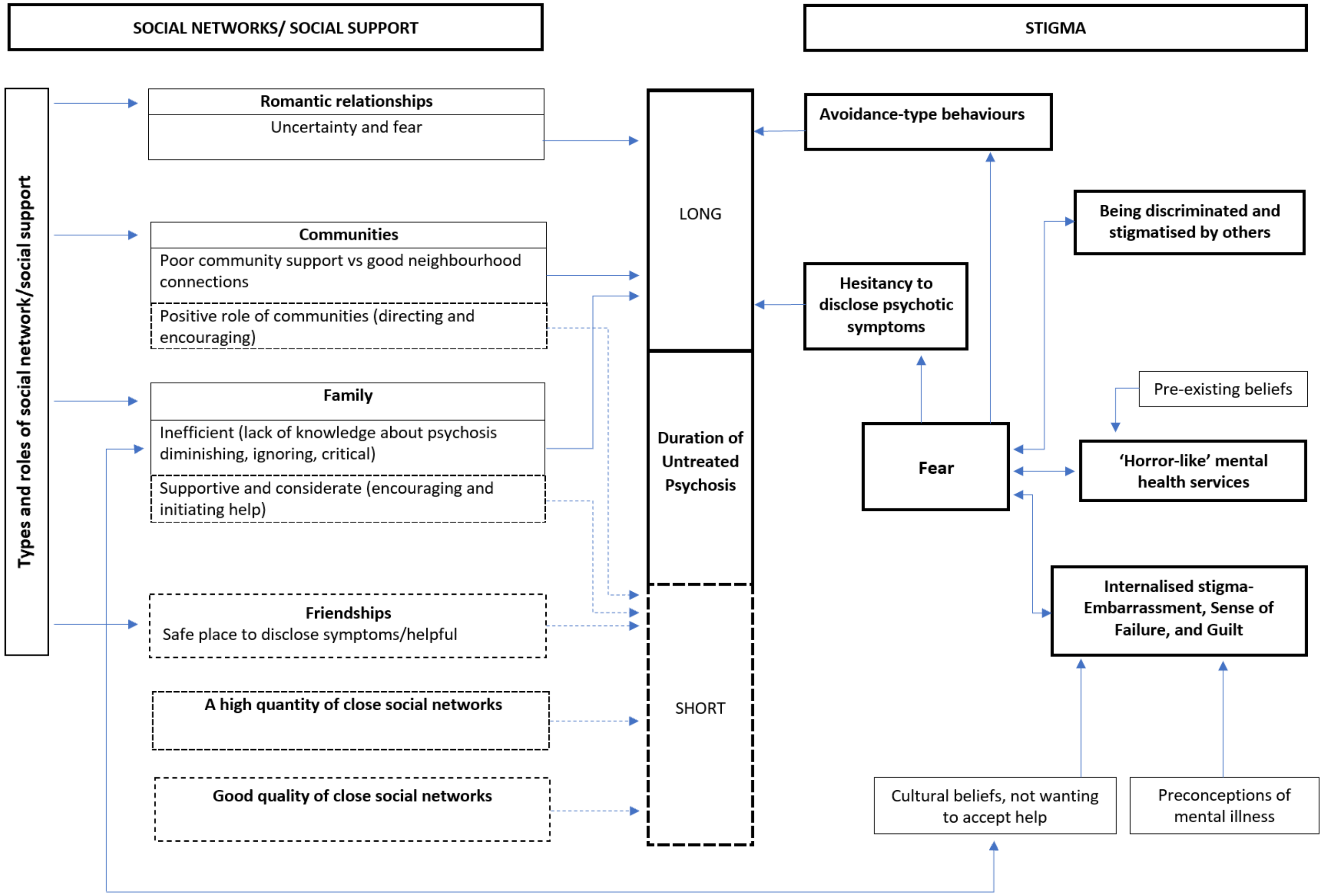
“Because I think mental health in a working environment or any kind of medical issue in a working environment that has to do with your head, they would rather get rid of you, rather than tell you to go and get help.” (Tanskanen et al., 2011, p. 6)

The Link Between Stigma and Social Networks/ Social Support

Four qualitative studies discussed how people with FEP found close social networks important in initiating treatment; however, they often feel resistant to accept help due to internalised stigma (de Haan, 2002; Jansen et al., 2018) fear of negative reactions from others (Tanskanen et al., 2011) or stigmatisation of the whole family (Ferrari et al., 2015). In turn, due to stigma rooted in cultural beliefs some families were not able to provide appropriate support for people with FEP, which become a barrier in receiving treatment. (Ferrari et al., 2015). For a visual representation of the multifaceted social determinants of DUP and the links between the factors please see Figure 2.

Figure 2

Diagram of Social Determinants and Duration of Untreated Psychos



Discussion

Main Findings

This systematic review explored the complexities and diversity of stigma and social networks impacting on DUP. It distinguished internalised stigma, fear of being discriminated, and stigmatised by others; as well as stigma in relation to mental-health services (e.g., fear of not being accepted, being labelled), which are all associated with longer treatment delays. It also highlighted mixed findings in terms of social networks, social support, and the role of family, friends, and communities in DUP. While some studies showed that poor social network and support can lead to longer DUP, other studies did not find such an association. Poor quality of social support (e.g., lack of good communication or satisfaction), can lead to longer DUP; however, a higher number of social contacts within social networks, can be a determinant of shorter DUP. The findings also revealed the link between stigma and social networks, and how these processes impact on the length of delays in treatment.

Duration of Untreated Psychosis

This review revealed that the studies differ in defining DUP, and often do not use validated instruments to measure it. This finding is in line with Dixon et al. (2019), who claimed that there are many challenges in how researchers and clinicians can reliably measure DUP (e.g., including lack of consistent approach in identifying the onset of psychosis and the end point of DUP). Moreover, Compton et al. (2007) revealed that DUP is measured solely as a delay time and does not include any characteristics of untreated psychosis such as frequency or severity of the symptoms experienced during this time. Therefore, development of a standardised measure of DUP is recommended. This would allow for the consistency in conceptualisation and measurement of DUP across the studies, and therefore, for generalisability of the findings. In the current review the median DUP ranged from five weeks to 104 weeks, which highlights the variability of DUP in FEP populations. However, these findings are more diverse than in a previous systematic review conducted by Boonstra et al. (2012) who found that across 28 studies the median DUP ranged between four to 34.4 weeks. The current review also found that one third of studies dichotomised DUP into long and short. The cut-off points for short DUP ranged between three months to two years; this means that there are inconsistencies between studies. Thus, the reliability of synthesising the findings in this review could be questioned, and therefore, should be interpreted with caution. It is also worth noting that it is not uncommon to use dichotomisation of DUP, which is considered as a conservative approach, and often helps to deal with non-normal distributions of DUP data (Perkins et al., 2005).

Stigma

The findings showed that stigma may impact on delays in treatment for people with FEP. Stigma (e.g., sense of failure, shame, fear of being discriminated and stigmatised by others, and fear of being perceived as different if they utilise mental health services) may trigger a range of behavioural strategies that people with FEP adopt (e.g., avoiding or ignoring psychotic symptoms) and hesitancy to disclose psychotic experiences to others, which leads to longer DUP. This is in line with wider research which revealed that people with mental health difficulties, and more precisely, with psychosis, often experience stigma (e.g., self-stigma, discrimination, and labelling), which might become a barrier to seeking help (Burke et al., 2016; Fung et al., 2008). The complexity of the processes which inform the relationship between stigma and treatment delays found in this review, is broadly similar to the systematic review on pathways to care conducted by Gronholm et al. (2017). However, the current review highlights an important role of fear within those processes.

Moreover, findings of the quantitative studies showed a significant relationship between stigma and treatment delays. This contrasts with the study conducted by Gronholm et al. (2017), who found mostly non-significant associations. This could be understood taking into consideration the differences in characteristics of the samples. Gronholm et al. (2017) examined perspectives of people with FEP, at risk, and their significant others, whilst the current study examined stigma from the perspective solely of people with FEP. One of possible explanation could be that stigma directly experienced by people with FEP might have a greater impact on DUP than the stigma experienced by their significant others, however, this should be further investigated. Moreover, cultural differences were found to play an important role in shaping the relationship between stigma (e.g., embarrassment and shame) and DUP (Ferrari et al., 2015). This is in common with previous research which showed that factors such as traditional belief systems and spiritual understanding of the cause of psychosis determine delays in treatment for psychosis (Burns et al., 2011). Therefore, further investigation of how cultural differences affect DUP could be considered.

Social Network/Social Support

There were some discrepancies across studies in the relationship between social network/social support and DUP. Strong social networks, higher number of social contacts and the quality of social support such as good communication with others and satisfaction with social support were found to lead to shorter DUP (Sundermann et al., 2014; Compton et al., 2011). It is unsurprising given the positive function of social networks on recovery and functioning among people with psychosis (Evert et al., 2003; El-Monshed & Amr, 1998). This is an important finding as people with FEP are usually less likely to recognise early psychotic experiences when compared to their significant others, which highlights others’ crucial role in recognising symptoms and, consequently, initiating treatment

(Tanskanen et al., 2011). This is also in line with the findings of this review which emphasized a supportive role of some families and friends, who often encourage and/or initiate help, thus reducing treatment delays (Drake et al., 2000; Jansen et al., 2015).

It cannot be ignored that two studies did not find a significant association between close social networks (Peralta et al., 2005; Ruiz-Veguilla, 2012) and DUP. One of the explanations might be that people with FEP, who feel that they have adequate support provided by significant others, do not seek additional help outside of their close social networks (Thoits et al., 2011).

Moreover, two studies found that long treatment delays were determined by unstable relationships or fear about how disclosing psychotic experiences might negatively impact on the relationships (Kalla et al., 2002; Thakoor et al., 2016). This is supported by study conducted by Griffiths et al. (2019), who found that people with FEP often do not want to tell others about their psychotic symptoms as they are worried about its consequences; for instance, on their relationships.

Six studies also investigated the role of communities; yet presented inconsistent findings. The results showed that the nature and the quality of communities seems to play an important role in DUP. Communities, which were able to recognise and support people with FEP, were found to be determinants of shorter DUP (Andersion et al., 2013; Cadario et al., 2012). While four studies revealed that poor community support and poor relationships (e.g., at work or at school) were found to prolong DUP (Peralta et al., 2005; Tanskanen et al., 2011; Ruiz-Veguilla et al., 2012; Tanskanen et al., 2011). This is not surprising as people with FEP might be more likely to come to the attention to people with whom they spend a considerable amount of time and with whom they have close and supportive relationships. On the other hand, for others it might be more difficult to talk about their psychotic experiences at work or at school as those relationships might be seen as remote (Tanskanen et al., 2011). In contrast, Burns and Kirkbride (2012) showed that people with FEP, who have strong social connections within communities, have longer DUP. One of the explanations might be that communities who have strong cultural beliefs and are self-sufficient might try to manage the difficulties on their own (Fuller et al., 2000), which might become a barrier for people with FEP to receive appropriate treatment.

The Link Between Social Network/ Social Support and Stigma

The findings of this review showed that it is likely that social network, social support, and stigma are closely linked. For instance, families who perceived psychosis as a ‘taboo illnesses’ were not able to provide support to their family member, and in turn, people with FEP due to feeling ashamed of their symptoms were less likely to accept help and more likely to hide their psychotic experiences from their social networks, resulting in treatment delays (Ferrari et al., 2015). This is in line with a wider research, which found that stigma related to psychotic experiences can negatively affect relationships with close ones (Norman et al., 2007), therefore, perhaps avoiding psychotic symptoms serves a purpose to decrease distress and maintain acceptance within social networks (Griffiths et al., 2019). It is also likely that the level of understanding and acceptance within close and extended social networks contribute to experiences of discrimination and self-stigma; however, this should be further investigated.

Clinical Implication

Given the findings of this systematic review and previous research, there is a need to decrease the length of DUP. This review showed that the community level interventions could be considered to reduce stigma related to psychosis and mental health services and to increase the awareness of early signs of psychosis. Along with interventions to increase social networks and good social support, such initiatives could be beneficial. For instance, services could introduce initiatives such as public awareness campaigns, educational interventions, or befriending programmes, working closely with communities (for instance, incorporating co-production by involving service users in designing and delivery of those interventions) (Priebe et al., 2020). Moreover, this review also stressed the importance of developing a more standardised tool to measure DUP (consistent and reliable measure of the onset of psychosis as the start of DUP and, perhaps, initiation of the treatment as the end of DUP).

Strengths and Limitations of Review

A major strength of this review is that it provides a broader focus of social determinants by including stigma, social support, and social networks. It also shows the links between these factors and how they impact DUP. This review aimed to include studies which examined the perspective of people with FEP. However, some studies used informants e.g., relatives, professionals to collect the data. Therefore, the interpretation of those findings being from the perspective solely of people with FEP could be biased and should be cautiously interpreted. However, using informants to gather information is not surprising as people who have psychotic symptoms for the first time might experience a high level of distress (Griffiths et al., 2019), which could lead to recollection bias. Moreover, a broad definition of DUP (such as treatment delays, treatment barriers) allowed to include all studies, which measure the time or delay between the onset of psychosis and treatment/ access to the service. However, this raises the question of reliability of the findings on DUP; especially the qualitative studies which often did not use a specific terminology of DUP. Therefore, further research which adopts a more conservative approach could be considered. A systematic review, which focuses solely on methodologically homogenous quantitative studies, could provide a clearer and objective picture of which social determinant impact on DUP. Although there are challenges integrating various study designs, the benefit of this is extending different levels of understanding and adding further depth to the findings (Pearson et al., 2015). In the current systematic review, the quantitative studies investigated presence and strength of relationships between DUP and social determinants, whereas qualitative studies provided insights into the nature of those relationships. This was particularly apparent for social networks. For instance, quantitative studies showed a mixed picture as to whether the size of a social network is associated with DUP, whereas qualitative studies highlighted an important role of the type and nature of those social networks in DUP.

The quality of qualitative studies in this review was generally acceptable with some studies showing methodological limitations (e.g., lack of using appropriate qualitative approach or data analysis). However, the quality of quantitative studies varied across studies. This was due to poor representativeness of the samples, lack of validity and reliability of the measures used. Moreover, most of the studies which examined stigma were qualitative, which were characterised by high quality ratings, while most of the studies which examined social networks/ social support were quantitative and were characterised by good to low quality ratings; therefore, this could also have affected the findings of this review.

Conclusion

This review highlights complex processes in which stigma, social networks, and social support impact on DUP. Stigma was found to be a potential social determinant of longer DUP; however, a mixed picture of the role of the family, friends, romantic relationships, and communities in treatment delays was found. It is likely that stigma and social networks are closely related interacting constructs. However, further research is required to understand the interplay between them. Therefore, interventions to reduce DUP should not only be directed towards one specific factor or individual’s characteristics but should take into consideration a more complex picture. In line with the findings, one of the initiatives provided by services could be increasing awareness of psychosis amongst the general population to reduce stigma and consequently minimise treatment delays.

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Appendix A: MMAT Appraisal

Table 3

MMAT Appraisal for Qualitative Studies

Study design category	**Questions for quality appraisal**	Anderson et al., 2013	Bay et al., 2016	Boydell et al., 2006	Cadario et al., 2012	Ferrari et al., 2015	Harris et al., 2012	Jansen et al., 2015	Jansen et al., 2018	Judge et al., 2008	Tanskannen et al., 2011	Yarborough et al., 2019
Screening questions	Are there clear research questions?	+	+	-	+	+	+	+	+	+	+	+
	Do the collected data allow to address the research questions?	+	+	+	+	+	+	+	+	+	+	+
Qualitative	Is the qualitative approach appropriate to answer the research question?	-	+	?	?	+	+	?	?	?	+	?
	Are the qualitative data collection methods adequate to address the research question?	+	+	+	+	+	+	?	+	+	?	?
	Are the findings adequately derived from the data?	+	?	?	?	+	+	+	+	?	?	+
	Is the interpretation of results sufficiently substantiated by data?	+	+	+	+	+	+	+	+	+	+	+
	Is there coherence between qualitative data sources, collection, analysis and interpretation?	+	+	+	+	+	+	+	+	+	+	+
Total MMAT (%)		71.43	85.71	57.14	71.43	100	100	71.43	85.71	71.43	71.43	71.43

(+) criteria met; (-) criteria not met; (?) there is no information

Table 4

MMAT Appraisal for Quantitative Studies

Study design category	**Questions for quality appraisal**	Bhui et al., 2014	Burns & Kirkbride, 2012	Carra et al., 2018	Compton et al., 2011	De Haan et al, 2002	Drake et al., 2000	Elshestawy et al., 2015
Screening questions	Are there clear research questions/ aims and objectives?	+	+	+	+	+	+	+
	Do the collected data allow to address the research questions?	+	+	+	+	+	+	+
Quantitative non- randomized	Are the participants representative of the target population?		?		?		?	
	Are measurements appropriate regarding both the outcome and exposure/intervention?		+		?		+	
	Are there complete outcome data?		+		+		+	
	Are the confounders accounted for in the design and analysis?		+		+		+	
	Changes occurred in the exposure status among the participants?		+		+		+	
Quantitative descriptive	Is the sampling strategy relevant to address the research question?	?		+		+		?
	Is the sample representative of the target population?	+		-		+		?
	Are the measurements appropriate?	?		?		?		?
	Is the risk of nonresponse bias low?	?		?		+		?
	Is the statistical analysis appropriate to answer the research question?	+		+		+		+
Total MMAT (%)		57.14	85.71	57.14	71.43	85.71	85.71	42.85

(+) criteria met; (-) criteria not met; (?) there is no information

Study design category	**Questions for quality appraisal**	Kalla et al., 2002	Kular et al., 2019	Larsen et al., 1998	Melle et al., 2005	Mueser et al., 2020	Norman et al., 2007
Screening questions	Are there clear research questions/ aims and objectives?	+	+	+	+	+	+
	Do the collected data allow to address the research questions?	+	+	+	+	+	+
Quantitative non- randomized	Are the participants representative of the target population?	+	?	-	?	?	
	Are measurements appropriate regarding both the outcome and exposure/intervention?	?	?	?	?	?	
	Are there complete outcome data?	?	-	?	+	+	
	Are the confounders accounted for in the design and analysis?	-	+	-	-	+	
	During the study period, is the intervention/exposure administered as intended?	+	+	+	+	+	
Quantitative descriptive	Is the sampling strategy relevant to address the research question?						?
	Is the sample representative of the target population?						-
	Are the measurements appropriate?						?
	Is the risk of nonresponse bias low?						?
	Is the statistical analysis appropriate to answer the research question?						+
Total MMAT (%)		57.14	57.14	42.85	57.14	71.43	42.85

(+) criteria met; (-) criteria not met; (?) there is no information

Study design category	**Questions for quality appraisal**	Peralta et al., 2005	Reininghaus et al., 2008	Renwick et al., 2017	Ruiz-Veguilla et al., 2012	Sundermann et al., 2014	Thakoor et al.,2016
Screening questions	Are there clear research questions/ aims and objectives?	+	+	+	+	+	-
	Do the collected data allow to address the research questions?	+	+	+	+	+	+
Quantitative non- randomized	Are the participants representative of the target population?	+	+	?	?	-	?
	Are measurements appropriate regarding both the outcome and exposure/intervention?	?	?	?	?	?	?
	Are there complete outcome data?	?	-	+	+	?	+
	Are the confounders accounted for in the design and analysis?	+	+	+	+	+	+
	During the study period, is the intervention/exposure administered as intended?	+	+	+	+	+	+
Quantitative descriptive	Is the sampling strategy relevant to address the research question?						
	Is the sample representative of the target population?						
	Are the measurements appropriate?						
	Is the risk of nonresponse bias low?						
	Is the statistical analysis appropriate to answer the research question?						
Total MMAT (%)		85.71	71.43	71.43	71.43	57.14	57.14

(+) criteria met; (-) criteria not met; (?) there is no information

Appendix B: Search Terms

Search terms based on the systematic review conducted by Gronholm et al. (2017)

CINAHL

S72 S70 OR S71

S71 S18 AND S31 AND S69

S70 S18 AND S31 AND S50

S69 S51 OR S52 OR S53 OR S54 OR S55 OR S56 OR S57 OR S58 OR S59 OR S60 OR S61 OR S62 OR S63 OR S64 OR S65 OR S66 OR S67 OR S68

S68 “Shame”

S67 “Discriminat*”

S66 “stereotyp*”

S65 “Prejudice”

S64 “social marginali?ation”

S63 "social rejection"

S62 "Help seeking attitude*"

S61 "social acceptance"

S60 "labe#ing"

S59 "Social Distance"

S58 "Stigma*"

S57 (MH "Shame+")

S56 (MH "attitude to mental illness")

S55 (MH "Social attitudes")

S54 (MM "Prejudice")

S53 (MH "Stigma")

S52 (MH "Stereotyping")

S51 (MH "Discrimination+)

S50 S32 OR S33 OR S34 OR S35 OR S36 OR S37 OR S38 OR S39 OR S40 OR S41 OR S42 OR S43 OR S44 OR S45 OR S46 OR S47 OR S48 OR S49

S49 “Social Isolation”

S48 “Social Network”

DURATION OF UNTREATED PSYCHOSIS

S47 "Friend*"

S46 "social support"

S45 “Family"

S44 "loneliness"

S43 "social inclusion"

S42 "Neighbourhood" or "Neighborhood"

S41 "Social withdrawal"

S40 "social contact*"

S39 "social exclusion"

S38 (MH "Loneliness")

S37 (MH "Social Networks")

S36 (MH "Social Isolation+")

S35 (MH "Family+")

S34 (MH "Support, Psychosocial+")

S33 (MH "Social Isolation+")

S32 (MH "Family Relations")

S31 S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30

S30 “First episode psycho*”

S29 “First episode of psycho*”

S28 "Schizo*"

S27 "Delus*"

S26 "Psychot*"

S25 "Hallucinat*"

S24 "Paranoi*"

S23 "Psychosis" OR "psychoses”

S22 Psycho* N5 sympt*

S21 “early onset of psycho*”

S20 (MH "Schizophrenia")

S19 (MH "Delusions")

S18 S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17

S17 “Help-Seeking behavio#r”

S16 “Treatment refusal*”

S15 “Therapy delay”

S14 “Health care access”

S13 "help seeking delay*"

S12 “Delay* in treatment*”

S11 “Delay* in care”

S10 Care N5 (pathway* or trajectory)

S9 "Treatment barrier*"

S8 seek* N5 help

S7 Duration N5 untreated psychosis

S6 “DUP”

S5 "duration of untreated psychosis"

S4 (MH "Treatment Delay")

S3 (MH "Health Resource Utilization")

S2 (MH "Treatment Refusal")

S1 (MH "Help Seeking Behavior")

Medline

1. exp Help-Seeking Behavior/
2. exp Treatment Refusal/
3. exp "Patient Acceptance of Health Care"/px [Psychology]
4. duration of untreated psychosis.mp.
5. dup.mp.
6. (Duration adj3 untreated psychosis).mp.
7. (seek* adj5 help).mp.
8. Treatment barrier*.mp.
9. (Care adj5 (pathway* or trajectory)).mp.

10. Delay* in care.mp.
11. Delay* in treatment*.mp.
12. health care utilization.mp.
13. help seeking delay*.mp.
14. therapy delay.mp.
15. health care access.mp.
16. Treatment refusal*.mp.
17. Help-Seeking behaviour.mp.
18. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17
19. exp Schizophrenia/
20. exp Delusions/
21. early onset of psycho*.mp.
22. first episode psycho*.mp.
23. First episode of psycho*.mp.
24. (Psycho* adj5 sympt*).mp.
25. psychos*.mp.
26. Hallucinat*.mp.
27. Paranoi*.mp.
28. Psychot*.mp.
29. Schizo*.mp.
30. Delus*.mp.
31. 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30
32. exp Family Relations/
33. exp Family/
34. exp Social Support/
35. exp Social Isolation/
36. exp Friends/
37. exp Loneliness/
38. exp Psychosocial Support Systems/

39. social exclusion.mp.

40. social contact*.mp.

41. Social withdrawal.mp.

42. (Neighborhood or neighbourhood).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]

43. social inclusion.mp.

44. Family.mp.

45. Social network*.mp.

46. social support.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]

47. social isolation.mp.

48. friend*.mp.

49. loneliness.mp.

50. 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49

51. exp Social Distance/

52. exp Social Discrimination/

53. exp Stereotyping/

54. exp Social Stigma/

55. exp Prejudice/

56. exp social marginalization/

57. exp Shame/

58. Attitude to health.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]

59. exp Mental Disorders/

60. 58 and 59

61. Stigma*.mp.

62. (Labelling or labeling).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]

63. Social acceptance.mp.

64. Help-seeking attitude.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]

65. social rejection.mp.

66. Prejudice*.mp.

67. Discriminat*.mp.

68. Stereotyp*.mp.

69. Shame.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]

70. 51 or 52 or 53 or 54 or 55 or 56 or 57 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69

71. 18 and 31 and 50

72. 18 and 31 and 70

73. 71 or 72

EMBASE

1. exp Help-Seeking Behavior/

2. exp Treatment Refusal/

3. exp health care utilization/

4. exp therapy delay/

5. duration of untreated psychosis.mp.

6. dup.mp.

7. (Duration adj3 untreated psychosis).mp.

8. (seek* adj5 help).mp.

9. Treatment barrier*.mp.

10. (Care adj5 (pathway* or trajectory)).mp.

11. Delay* in care.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

12. Treatment delay*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

13. help seeking delay*.mp.

14. Treatment refusal*.mp.

15. Help-Seeking behaviour.mp.

16. health care access.mp.

17. exp Schizophrenia/

18. exp Delusions/

19. early onset of psycho*.mp.

20. first episode psycho*.mp.

21. First episode of psycho*.mp.

22. (Psycho* adj5 sympt*).mp.

23. psychos*.mp.

24. Hallucinat*.mp.

25. Paranoi*.mp.

26. Psychot*.mp.

27. Schizo*.mp.

28. Delus*.mp.

29. exp Family Relation/

30. exp Family/

31. exp Social Support/

32. exp Social Isolation/

33. exp Friends/

34. exp Loneliness/

35. exp Social network/

36. social exclusion.mp.

37. social contact*.mp.

38. Social withdrawal.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

39. (Neighbourhood or Neighborhood).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

40. social inclusion.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

41. Family.mp.

42. Social network*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

43. social support.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

44. social isolation.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

45. friend*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

46. loneliness.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

47. 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46

48. exp Social Distance/

49. exp Social Discrimination/

50. exp Stereotyping/

51. exp Social Stigma/

52. exp Prejudice/

53. exp social marginalization/

54. exp Shame/

55. exp attitude to mental illness/

56. exp Social acceptance/

57. exp social rejection/

58. Stigma*.mp.

59. (Labeling or labelling).mp.

60. Help seeking attitude.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

61. Prejudice*.mp.

62. Stereotyp*.mp.

63. Discrimination.mp.

64. Shame.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

65. exp psychosis/

66. Delay in treatment.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

67. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 66

68. 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 65

69. 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64

70. 47 and 67 and 68

71. 67 and 68 and 69

72. 70 or 71

PsycInfo:

S72 S70 OR S71

S71 S18 AND S33 AND S69

S70 S18 AND S33 AND S51

S69 S52 OR S53 OR S54 OR S55 OR S56 OR S57 OR S58 OR S59 OR S60 OR S61 OR S62 OR S63 OR S64 OR S65 OR S66 OR S67 OR S68

S68 "social marginali?ation"

S67 DE "Shame"

S66 “Shame”

S65 “Discrimination”

S64 “stereotyped attitudes”

S63 “Prejudice”

S62 “Social rejection”

S61 “Help Seeking attitude”

S60 “Labe?ing”

S59 "Social Distance"

S58 “Stigma*”

S57 DE "mental illness (attitudes toward)"

S56 DE "social acceptance"

S55 DE "Prejudice"

S54 DE "Stigma"

S53 DE "stereotyped attitudes"

S52 DE "Social Discrimination"

S51 S34 OR S35 OR S36 OR S37 OR S38 OR S39 OR S40 OR S41 OR S42 OR S43 OR S44 OR S45 OR S46 OR S47 OR S48 OR S49 OR S50

S50 “loneliness”

S49 “Social Isolation”

S48 “Social Network*”

S47 “Friend*”

S46 “social support”

S45 “Family”

S44 “Social inclusion”

S43 “Neighbourhood" OR "Neighborhood”

S42 “Social withdrawal”

S41 “social contact*”

S40 “social exclusion”

S39 (DE "Social networks")

DURATION OF UNTREATED PSYCHOSIS

S38 (DE "loneliness")

S37 (DE "Social Isolation")

S36 (DE "social support")

S35 (DE "Family")

S34 (DE "Family Relations")

S33 S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32

S32 "Schizo*"

S31 "Delus*"

S30 "Psychot*"

S29 "Hallucinat*"

S28 "Paranoi*"

S27 “psychos*”

S26 Psycho* N5 sympt*

S25 “First episode of psycho*”

S24 “first episode psycho*”

S23 “early onset of psycho*”

S22 (DE "positive and negative symptoms")

S21 (DE "psychosis")

S20 (DE "Delusions")

S19 (DE "Schizophrenia")

S18 S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17

S17 “Help-Seeking behaviour”

S16 “Treatment refusal”

S15 “therapy delay”

S14 “health care access”

S13 “help seeking delay*”

S12 "Treatment delay*”

S11 “Delay in treatment*”

DURATION OF UNTREATED PSYCHOSIS

S10 “Delay* in care”

S9 (Care) N5 (pathway* or trajectory)

S8 “Treatment barrier*”

S7 seek* N5 help

S6 Duration N3 (untreated psychosis)

S5 “DUP”

S4 "duration of untreated psychosis"

S3 (DE "health care utilization")

S2 (DE "Treatment Refusal")

S1 (DE "Help Seeking Behavior")

Appendix C: Duration of Untreated Psychosis Information- Quantitative Studies

Table 5

Duration of Untreated Psychosis Information- Quantitative Studies

Author, Year	Definition of DUP	DUP Instrument	Median Mean (SD)	Dichotomisation	Additional informants (DUP, stigma, SN)
Bhui et al., 2014	The start of psychotic symptoms and pharmacological treatment	Personal and Psychiatric History Schedule (PANSS) (Jablensky et al., 1992)	Median= 3 months	Not reported	No
Burns and Kikbride, 2012	The time between positive psychotic symptoms and initiation of hospital treatment	Detailed interviews with participants and their caregivers	Median= 6 weeks Mean=35.08 (62.01)	Not reported	Family members, clinical notes
Carra et al., 2018	The start of the prodrome and initiation of antipsychotic medications	Nottingham Onset Schedule- DUP version (Singh et al., 2000)	Mean= 9.2 months (11.9)	Not reported	No
Compton et al., 2011	The start of positive psychotic symptoms and first hospital admission	The Symptom Onset in Schizophrenia inventory (Perkin et al., 2000); Course of Onset and Relapse Schedule/ Topography of Psychotic Episode (Norman & Malla, 2002)	Median= 22.3 weeks Mean= 67.5 (126.1)	Short: hazard ratios >1 Long: hazard ratios <1	Family members

Author, Year	Definition of DUP	DUP Instrument	Median Mean (SD)	Dichotomisation	Additional informants (DUP, stigma, SN)
de Haan et al., 2002	The start of psychotic symptoms and the initiation of antipsychotic medication	Interviews, medical records, PANSS (Kay et al., 1987)	Not reported	Short < 6 months Long >= 6 months	No
Drake et al., 2000	The start of psychotic symptoms (delusions and hallucinations) and first admission to in and out-patients	Semi-structured interviews, case notes, referral letters, information from clinicians	Median= 12 weeks Mean= 38 weeks	Not reported	No
Elshestawy et al., 2015	The start of psychotic symptoms and adequate treatment	Interviews with participants with FEP and significant others	Median= 2 years	Short DUP< 2 years Long DUP>= 2 years	No
Kalla et al., 2002	The time between psychotic symptoms (inappropriate behaviour) and admission	Interviews with clients, reports from significant others, medical records	Median= 2 months	Not reported	Family
Kular et al., 2019	Positive psychotic symptoms and start of appropriate treatment	The Nottingham onset schedule (Singh et al., 2005)	Median=357 days (11.9 months)	Short DUP < =357 days Long DUP > 357 days	No
Larsen et al., 1998	Start of psychotic symptoms and start of adequate/hospital treatment	Interviews, onset of psychotic symptoms: PANSS (Kay et al., 1987)	Median=54 weeks	Short DUP< 54 weeks Long DUP>= 54 weeks	Carers

Author, Year	Definition of DUP	DUP Instrument	Median Mean (SD)	Dichotomisation	Additional informants (DUP, stigma, SN)
Melle et al., 2005	Positive psychotic symptoms and start of appropriate treatment	Not reported Psychotic symptoms measured using PANSS (Kay et al., 1987).	Median= 16 weeks Median= 5 weeks	Not reported	No
Mueser et al., 2020	No definition	Interviews: The Structured Clinical Interviews for Axis I DSM-IV disorders (SCID; First et al., 2004)	Median= 74 weeks	Short DUP < 74 weeks Long DUP > 74 weeks	No
Norman et al., 2007	The start of psychotic symptoms and pharmacological treatment	Interviews	Median= 27.2 weeks Mean=77.3 (129.6)	Not reported	Clinicians, family members, clinical notes
Peralta et al., 2005	The onset of positive psychotic symptoms and first hospital admission	Semi-structured questionnaires	Mean= 39.4	Short < 11 months Long > 11 months (median split)	Significant others, clinical notes
Reininghaus et al., 2008	The start of psychotic symptoms and contact with a mental health service	Interviews with patients, close relatives, clinical notes, the Personal and Psychiatric History Schedule (WHO, 1996)	Not reported	Not reported	Case notes
Renwick et al., 2017	Onset of psychotic symptoms and pharmacological/psychosocial interventions	Assessment with a client with FEP, family, alongside medical records	Median= 3 months	Not reported	Clinicians

Author, Year	Definition of DUP	DUP Instrument	Median Mean (SD)	Dichotomisation	Additional informants (DUP, stigma, SN)
Ruiz-Veguilla et al., 2012	The start of psychotic symptoms and pharmacological treatment	Instrument, interviews with families, clinical notes	Median= 4 weeks	Not reported	Family members
Sundermann et al., 2014	Start of first psychotic symptoms and adequate treatment	Not reported	Median= 12 weeks	Not reported	No
Thakoor et al., 2016	The start of psychotic symptoms and pharmacological treatment	Medical records and information from patients' families; SCID (First et al., 2004)	Not reported	Short DUP<= 3 months Long DUP> 3 months	No

Appendix D: Duration of Untreated Psychosis/ Treatment Delays Information- Qualitative Studies

Table 6

Duration of Untreated Psychosis/ Treatment Delays Information- Qualitative Studies

Author, Year	Type of analysis	Definition of DUP/ treatment delays	Median Mean (SD	Dichotomisation
Anderson et al., 2013	Content Analysis	Barriers to help seeking/ factors of help-seeking	Not reported	Not reported
Bay et al., 2016	Interpretative Phenomenological Analysis (IPA)	Long DUP ('obstacles to care'), the end of DUP: access to mental health services	Not reported	Short< 6months Long>= 6 months
Boydell et al., 2006	Qualitative Secondary Analysis	Help seeking delays/ barriers	Not reported	Not reported
Cadario et al., 2012	Analysis of content	Help seeking/ access to mental health services/ effective treatment/ delays in help seeking	Not reported	Not reported
Ferrari et al., 2015	Thematic Analysis	DUP; barriers to help seeking/ delays	Median, months European group =7 African origin= 9 Caribbean-origin=16	Not reported
Harris et al., 2012	IPA	Barriers to early intervention services' admission	Not reported	Not reported

Author, Year	Type of analysis	Definition of DUP/ treatment delays	Median Mean (SD	Dichotomisation
Jansen et al., 2015	Thematic Analysis	Barriers to adequate treatment (treatment for psychosis)/ help-seeking behaviour	Not reported	Not reported
Jansen et al., 2018	Thematic Analysis	Barriers to receive adequate treatment/ help seeking	Not reported	Not reported
Judge et al., 2008	Grounded Theory and Content Analysis	DUP: the start of psychotic symptoms and start of antipsychotic medication	Not reported	Not reported
Tanskanen et al., 2011	Thematic Analysis	DUP; Barriers/ factors to help seeking/ treatment	Median= 106 days	Short< 3 months Long> 3 months
Yarborough et al., 2019	Content Analysis	Delays (factors) in ‘care seeking’	Not reported	Not reported

Chapter 3: Bridging Chapter

This chapter summarises the systematic review and provides a rationale for the empirical paper.

Summary of the Systematic Review

The systematic review explored primary research studies that examined social determinants (stigma and social networks/social support) and DUP. In accordance with the inclusion criteria, 11 qualitative and 19 quantitative studies were investigated, with eight studies conducted in the UK. Internalised stigma (e.g., feeling embarrassed or guilty), fear and stigma related to mental health services, and being discriminated and stigmatised by others due to psychotic experiences were found to be associated with treatment delays for people with FEP. The findings in relation to quality, quantity, and types of social networks (family, friends, communities) varied across the studies. While some studies report on the beneficial role of social networks in reducing DUP; others highlight factors such as low levels of contact, poor quality of social support (e.g., poor communication, low level of support, others' lack of knowledge about psychosis) that can contribute to treatment delays. However, other studies did not find associations between close social networks, number of contacts and DUP. The review also reported on the potential links between stigma and social networks, which could further contribute to the length of DUP. Finally, the lack of consistency on how DUP was defined and measured is discussed. It should be noted that studies showed a number of methodological limitations (e.g., poor representatives of the samples, or lack of consistency in using valid and reliable outcome measures), therefore, the findings should be interpreted with caution.

Background and Rationale for the Empirical Paper

There are inconsistent findings of the impact of socio-demographic factors such as age, gender, ethnicity, living situations on the length of DUP (Norman & Malla, 2001; Schoer et al., 2019). In terms of the environmental factors, these have been found to contribute to the development of psychosis (Richardson et al., 2018). However, there is still limited evidence of whether where people live, in rural or urban area, affect treatment delays for people with FEP. While some studies highlight that living in rural areas might be a barrier to receiving appropriate treatment (Jordan et al., 2004); other studies have not found associations between neighbourhood factors and DUP (Kirkbride et al., 2012).

The empirical paper builds on the systematic review, by examining socio-demographic, clinical and environmental factors in DUP. This is important as the findings of the previous literature are inconsistent and/or lacking in the UK context. Moreover, despite the need to reduce treatment delays for people with FEP, more recently the interest of the determinants of DUP has substantially reduced. However, understanding factors which influence DUP, could help early intervention (EI) services for psychosis to direct and implement specific interventions towards those who are more likely to experience delays; and, therefore, improve their pathways to care.

In conclusion, the systematic review showed the multi-dimensionality of social factors which determine the length of DUP. The empirical paper will address the existing gaps regarding socio-demographic (e.g., age, gender, ethnicity), clinical (mode of onset of psychosis) and environmental factors (rural-urban areas) in DUP. The findings of both, the empirical paper, and the systematic review, will add to the understanding of which determinants contribute to longer DUP for people with FEP.

Chapter 4: Empirical paper

Clinical, socio-demographic, and environmental factors in the Duration of Untreated Psychosis, among patients with First Episode of Psychosis

Short running title: Factors of the Duration of Untreated Psychosis

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Word count: 4997

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Abstract

Aims: As treatment delays can lead to poor treatment outcomes, it is important to examine the variations in duration of untreated psychosis (DUP) among people with first episode of psychosis (FEP), to reduce barriers to treatment and improve access to care. Therefore, this study aimed to examine the socio-demographic, clinical and environmental factors associated with DUP.

Methods: One hundred and fifty-five participants with FEP, who were residents of Cambridgeshire and Peterborough between 2013-2015, were identified through the Clinical Records Anonymisation and Text Extraction (CRATE) system. Kruskal-Wallis tests were used to examine socio-demographic, clinical and environmental differences in DUP. A multivariable logistic regression was conducted to examine DUP by rural-urban area and developmental stages ('adolescents', 'emerging adults' and 'adults'), adjusted for confounding variables.

Results: The findings showed that participants who experienced an insidious mode of onset had longer DUP. However, there was no significant association between rural-urban status and DUP and there was no strong evidence that socio-demographic factors differed in DUP. There was a tentative trend towards adolescents and 'other' minority group having longer DUP; however, further research is warranted.

Conclusion: The findings showed the role of an insidious mode of psychosis in DUP. The results also highlight that there might be other factors or more complex processes which influence DUP, which need to be further investigated.

Key words: duration of untreated psychosis, rural, urban, socio-demographic, clinical factors

Introduction

People with psychosis may experience high levels of distress due to their psychotic symptoms (Cooke et al., 2007). Whist many can recover and reach remission state; there is a high risk of relapse (Robinson et al., 1999). There is an established evidence base for the clinical and cost-effectiveness of Early Intervention (EI) (Bird et al., 2010; McCrone et al., 2010). Research shows that patients have benefited from EI services, have better treatments outcomes (Corell et al., 2018) and have a lower risk of relapse (Bird et al., 2010).

During the delay in receiving an appropriate treatment, known as duration of untreated psychosis (DUP), psychotic symptoms can further develop or worsen leading to poor outcomes (Marshall et al., 2005; Perkins et al., 2005). Therefore, it is essential to understand the factors and processes which contribute to treatment delays, as this could improve timely delivery of evidence-based treatment and strengthen the chances of recovery for people with FEP (Perkins et al., 2005, Bird et al., 2010).

The Health Belief Model reveals that there are several domains, which may affect whether a person will seek help. This includes person’s understanding about the risk of developing an illness, its severity, the likelihood of decreasing the risk, and any potential barriers (Rosenstock, 1966). While the Model of Health Care Utilisation emphasizes factors such as client’s socio-demographic characteristics, values, and beliefs, which are linked with a need to seek help, and a range of domains, which allow a client to access appropriate service (Anderson, 1995).

The aforementioned models reveal the importance of a range of factors in understanding help-seeking behaviour, however, the existing research on which factors increase the length of DUP is still inconsistent. A systematic review conducted by Shoer et al. (2019) found that Black-Caribbean patients had longer DUP; other studies did not support the association between ethnicity and DUP (Oduola et al., 2020; Anderson et al., 2015). However, that the categorisation of ethnic groups and, sample size varied across the studies, which might explain the differences in findings.

Apeldoorn et al. (2014) found that being a male is a predictor of longer DUP; however, Hastrup et al. (2018) found that females have longer treatment delays, while Cascio et al. (2012) concluded that there is no such association. Some studies revealed that social factors such as being unemployed, living alone (Oduola et al., 2019b), having a low socio-economic status (Peralta et al., 2005) predict longer DUP; other studies do not support those findings (Compton et al., 2008; Pek et al., 2006). However, the varied findings on how socio-demographic factors affect DUP could be due to the differences in conceptualisation and dichotomisation of DUP, and samples' characteristics.

Current research also shows heterogenous results as to whether age is a predictor of DUP. Whilst Larsen et al. (1996) did not find an association between age and DUP, some studies showed that a younger age of onset (Perkins et al., 2004; Norman et al., 2004; Burns & Kirkbride, 2012), or more precisely, being an adolescent is a predictor of longer DUP (Dominguez et al., 2013; Joa et al., 2009). Some of the explanations as to why younger people experience longer time of untreated psychosis, are the difficulties in recognising early psychotic presentation and differentiating psychotic symptoms from developmentally normative emotional and behavioural difficulties (such as grandiosity, egocentrism) presented during adolescence (Dominguez et al., 2013; Harrop & Trower, 2001). Moreover, young adults, who are at the peak of the developmental stage (18-25 years old), often have a strong sense of autonomy, which can also prevent them from seeking help (Wilson et al., 2011). In turn, some studies revealed that younger people have shorter DUP (Cratsley et al., 2008; Hastrup et al., 2018), this could be due to strong social networks e.g., families, teachers, who quickly initiate help (Hastrup et al., 2018; Morgan et al., 2006; Bhui et al., 2014), potentially reducing delays in accessing treatment.

The association between a mode of onset of psychosis and DUP has been also investigated. Mode of onset of psychosis is defined as the time in which psychotic symptoms develop. Psychotic symptoms can develop suddenly (within days or a week) or in more gradual way, for more than few months (Compton et al., 2008). An acute mode of onset of psychosis was found to be associated with shorter DUP (Kanahara et al., 2013; Compton et al., 2008). Patients who experienced gradual/ insidious changes in their presentation, are less likely to seek help immediately. One of the explanations is that insidious symptoms are more difficult to recognise, which might become a barrier to accessing support (Chen et al., 2005).

The neighbourhood factors e.g., living in an urban or deprived area, are associated with an increased risk for developing psychosis (Bhavsar et al., 2014; Burns & Esterhuizen, 2008). However, the evidence whether environmental factors such as where people live predict the length of DUP is still inconsistent and lacking in the UK context. Hastrup et al. (2018) found that individuals who live in rural areas of Denmark experience longer DUP. One of the reasons could be that people who live in rural or remote areas find it more difficult to access EI services (Kelly et al., 2007). In contrast, Kirkbride et al. (2010) who conducted a study in inner-city Southeast London reported that neighbourhood factors do not predict the length of DUP. This is in line with Thirthalli et al. (2017) who also revealed that there are no differences in delays to treatment between people who live in urban and rural areas of India. It has to be noted that the studies were conducted in different countries, where the rural-urban classifications varied. Therefore, it might not be feasible to compare those findings.

In general, there are a limited number of studies investigating environmental, socio-demographic, and clinical factors in DUP, with the existing studies presenting inconsistent results. The interest of examining the factors related to DUP has decreased in recent years, which resulted in the gap in the most recent findings in the literature in this area. To the researcher's knowledge there is lack of research investigating the association between rural and urban areas and DUP in the UK context and little and inconsistent research which examines the DUP between adolescents 14-17 years old, emerging adulthood (18-25 years old) and young adults (>25 years old). The identification of those variations in DUP among people with FEP will help identify ways to improve the referral pathways, implement age-specific interventions and highlight strategies to reduce the barriers in accessing the treatments, on both environmental and individual levels.

Primary Research Question

- Which individual and environmental factors are associated with duration of untreated psychosis (DUP) among patients with first episode of psychosis?

Secondary Research Questions:

- What socio-demographic characteristics of individuals with first episode of psychosis are associated with duration of untreated psychosis?
- Are there rural-urban differences in duration of untreated psychosis among patients with first episode of psychosis (FEP), after controlling for socioeconomic status?
- Are there differences in duration of untreated psychosis between adolescents (14-17 years old), emerging adults (18-25 years old) and young adults (26-35 years old) with first episode of psychosis?

- What socio-demographic characteristics of individuals with first episode of psychosis are associated with mode of onset of psychosis?

The objectives of the research were to: (a) identify socio-demographic factors associated with DUP by rural-urban status; (b) estimate DUP among patients with FEP by their rural-urban status; (c) examine whether DUP differs between FEP patients those aged 14-17 years old, 18-25 years old and 26-35 years old; (d) identify the relationship between the mode of onset of psychosis and DUP; and (e) examine the relationship between the mode of onset of psychosis and socio-demographic factors.

Methods

Design

This is a cross-sectional study of anonymised electronic health records of patients with a first episode of psychotic disorder. Participants were identified through the Cambridgeshire and Peterborough NHS Foundation Trust Research Database (CPFTRD) using the Clinical Records Anonymisation and Text Extraction (CRATE) (Cardinal, 2017). This is a fully anonymised electronic clinical records systems, which allowed extraction of anonymised clinical data collected between 2013-2015. The CPFT electronic records were operationalised in 2013, and the dates were chosen as this research forms part of a planned longitudinal study. The methodological approach was based on previous published studies that used a similar anonymised dataset, Clinical Records Interactive Search- First Episode Psychosis (CRIS-FEP) at the South London and Maudsley NHS Foundation Trust (SLaM) (Oduola et al., 2019a; Oduola et al., 2019b).

Participants

The inclusion and exclusion criteria were based on those used in the CRIS-FEP study (Oduola et al., 2019a; Oduola et al., 2019b). Participants were included if they were (a) resident in Cambridgeshire and Peterborough areas between May 2013 and April 2015, (b) and were accepted by an early intervention psychosis service between these times (c) were diagnosed with a psychotic disorder (e.g., ICD F20-29, F30-33); (d) were 14 to 35 years old. Participants were excluded if they were patients who a) developed psychosis due to an acute intoxication, b) or/ and due to organic illness; c) or had contact with services due to previously experienced psychosis. The age range of participants in this study was based on the referral specifications introduced by the mental health service between 2013 and 2015.

Ethics

The anonymized CPFT Research Database was granted NHS Research Ethics Committee (REC) approval (reference: 17/EE/0442). The study also obtained the Health Research Authority (HRA) approval (reference: 20/NI/0035) and the local CPFTRD Oversight Committee approval (reference: M00964). The project used anonymized Research Database; therefore, the researcher did not have access to identifiable information. Patient consent was not required for this study.

Variables

Duration of untreated psychosis and mode of onset of psychosis were collected through screening the clinical notes and were calculated using the Personal and Psychiatric History Schedule (PPHS; WHO, 1996), in line with the previous study (Oduola et al., 2020). Duration of untreated psychosis was measured from the start of the symptoms (such as delusions, hallucinations, disorganised behaviour) to the date of first contact with secondary mental health service for psychosis. Mode of onset of psychosis was measured using the time in which psychotic symptoms occurred. This was initially categorised into five categories: abrupt (within hours/ weeks), acute (within one week), moderately acute (within one month), gradual (within six months) and insidious (more than six months) (Oduola et al., 2020). This was further re-defined into three main categories: an acute mode (symptoms which develop within one month; including abrupt, acute, and moderately acute onsets of psychosis), a gradual, and an insidious mode.

The Medical Research Council Sociodemographic Schedule (MRC-SDS; Mallet et al., 1997) was used to collect data on socio-demographic characteristics. Ethnicity was categorised according to the 2011 UK Census categories (Office for National Statistics [ONS], 2011). However, this categorisation had to be collapsed into three main categories (White British, White non-British and Others (including Black, Asian and others)) due to the small number of patients from an ethnic minority background in the study catchment area. This categorisation was incorporated beyond the descriptive analysis. The categories for other variables were also collapsed for the statistical purpose (see Table 2). For example, education was divided into two categories: (‘educated’ (including vocational, tertiary, degree, postgraduate) and ‘Qualification not yet obtained), living circumstances into ‘alone’ or ‘with others’ (family, friends etc); the relationship status into ‘single (including divorced, widowed) or ‘in a relationship’. Rural and urban status was defined by the small areas level, Lower Layer Super Output area (LSOA), according to the ONS Rural Urban Classification (ONS, 2011). In line with availability of the data in CRATE, and Bibby and Brindley (2013) the rural-urban areas were classified using RUC2011 codes accordingly: ‘urban’ (‘major conurbation’, ‘minor conurbation’, ‘city and towns’) and ‘rural’ (‘town and fringe’, ‘village’, and ‘hamlets and isolated dwellings’).

Procedure

Two hundred and twenty-four participants who attended mental health services for first episode psychosis between May 2013 and April 2015 were initially identified through CPFTRD via CRATE system (Cardinal, 2017). The researcher screened each potential participant by reading their clinical notes thoroughly. Participants were selected based on inclusion and exclusion criteria. Additionally, based on the previous study conducted by Oduola et al. (2019b), the researcher extracted the data using search terms such as ‘delusions’; ‘psychos*’; ‘psychosis’; ‘voices’. The anonymised data were extracted manually into an excel spreadsheet. Sixteen participants were scored by the primary researcher and discussed with SO to ensure the consistency and the quality of the coding. Moreover, inter-rater reliability (IRR), using the Interclass correlation coefficient (ICC), was conducted to confirm the accuracy of the scorings on DUP. ICC of .76 indicated a good agreement.

Statistical Analysis

An open-source statistical software PSPP (Free Software Foundation, 2013), approved by the Trust, was used to analyse the data. First, descriptive analyses, with DUP as a continuous dependent variable, were conducted to explore clinical and socio-demographic characteristics of the sample. The assumptions of normally distributed DUP were violated (see Figure 1), therefore, non-parametric tests were performed, and median DUP was estimated. Kruskal-Wallis tests were conducted to examine the differences in DUP (continuous dependent variable) by socio-demographic and clinical factors (independent variables). For further analysis, DUP was dichotomised into short DUP (=< 6 months) and long DUP (> 6 months), as in line with previous studies (Kaminga et al., 2018; Ran et al., 2018; Addington et al., 2015; Oduola et al., 2020). The cut-off point of six months was used in line with previous research which showed that delays beyond this time have a significant negative effect on the treatment outcomes (Cechnicki et al., 2014). Chi-square tests were performed to examine relationship between rural-urban areas (as dependent variable) and socio-demographic and clinical factors. Chi-square tests were also conducted to measure the relationship between the mode of onset of psychosis (as dependent variable) and socio-demographic factors. To address the rural-urban differences in DUP (categorical dependent variable), unadjusted logistic regression analyses were performed, and the analysis was repeated to adjust for potential a-priori confounding variables (age, gender, employment status and education level). To examine the age group differences in DUP, logistic regression was also conducted, also adjusted for a-prior confounding variables.

Results

Characteristics of the Sample

One hundred and fifty-five participants met the study inclusion criteria. Initially, 224 patients with first episode of psychosis were identified through the CRATE system. There were 69 participants who had to be excluded from the analysis; 66 participants had previous contact with mental health services for psychotic experiences, two participants did not present with psychotic disorder, and one participant had psychotic symptoms due to an organic illness. The median DUP was 129 days (IQR: 3-5406). There were 67 (43.2%) and 88 (56.8%) participants who had short and long DUP, respectively. More than half of participants were White British (51.3%). The majority of the sample was male (71%), lived with family member (70.3%), finished school with qualifications (e.g., GCSE, A-level or a degree) (75.4%); and were single (67.1%). The mean age was 23.38 (SD = 5.30) years old (See Table 1).

Figure 1

Positively Skewed Distribution of DUP (in days) (N=155)

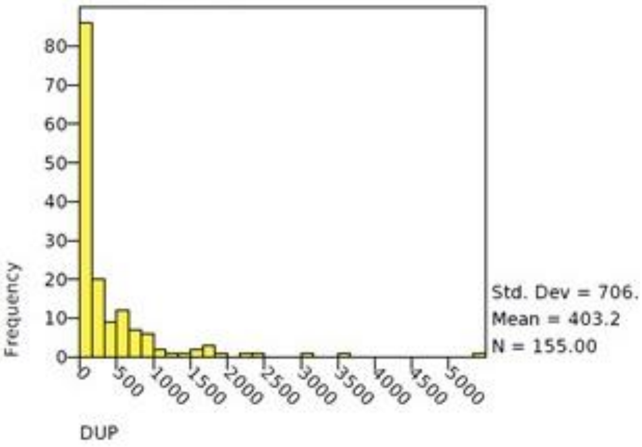

Table 1

The Characteristics of the Sample

	N=155	%
Gender		
Male	110	71
Female	45	29
Age M (SD)	23.38 (5.30)	
Range	15-34	
Age category		
Adolescents	23	14.8
Emerging adults	77	49.7
Young adults	55	35.5
Ethnicity		
White British	79	51.3
Black African	4	2.6
Black Caribbean	1	.6
White non-British	26	16.8
Asian	13	16.8
Mixed	7	4.5
Other	13	8.4

	N=155	%
Education		
School, no qualification	25	16.1
School with qualification	45	29.0
Tertiary, Further	34	21.9
Vocational	17	11.0
Degree	18	11.6
Postgraduate	3	1.9
Living situation		
Alone (or with children)	16	10.3
Family, relatives	109	70.3
Other	30	19.4
Relationship status		
Single	104	67.1
Married	10	6.5
In a relationship	34	21.9
Divorced, separated	4	2.6
Employment status		
Employed	54	34.8
Student	38	24.5
Unemployed	60	38.7
Mode of onset		
Abrupt	4	2.6
Acute	17	11.0
Moderately Acute	34	21.9
Gradual	36	23.2
Insidious	64	41.3
Urban/ Rural categories		
City and Town	109	70.3
Town and Fringe	29	18.7
Village	13	8.4
Hamlet and Isolated Dwellings	4	2.6
DUP (days)		
Median/ range	129	3-5406
Short	67	43.2
Long	88	56.8

Note: Missing data: Ethnicity=9 participants; Education= 13 participants; Living situation = 13 participants; relationship status= 3 participants; Employment status= 3 participants

The Relationship Between Socio-Demographic, Clinical Factors, and Rural-Urban Status.

The relationship between rural-urban status and the study variables is presented in Appendix A. The analysis showed that participants from urban areas were more likely to be unemployed compared with their rural counterparts (45.9% vs. 23.3% respectively, $\chi 2$ = 8.13, p=0.05). There were no other rural-urban differences by study variables observed.

Results Regarding Research Questions

The Individual and Environmental Differences in DUP

The individual characteristic differences in DUP are presented in Table 2. The median DUP was estimated for each variable, along with the corresponding Kruskal-Wallis tests. The results indicate that there were no differences in DUP by gender, employment status, level of education, living situation, relationship status and rural-urban area. There was a weak evidence that adolescents, (χ^2 (2) = 4.88, p = .09), and ‘other’ minority group, (χ^2 (2) = 5.16, p = .08), had longer DUP, however, the results did not reach a statistically significant level. However, there was a difference in mode of onset of psychosis in DUP, (χ^2 (2) = 127.29, p < .001). Participants, who experienced an insidious mode of onset of psychosis, had longer DUP.

Table 2

Individual and environmental differences in DUP

	Median (IQR) days	Kruskal-Wallis (df)	*p*
Gender			
Male	158.5 (31.3-540.5)	1.23 (1)	.27
Female	85.0 (22.0-478.0)		
Age			
Adolescents	326.0 (60.0-703.0)	4.88 (2)	.09
Emerging adults	101.0 (21.50-413.0)		
Adults	132.0 (22.00-509.0)		
Ethnicity			
White British	103.0 (28.8-540.5)	5.16 (2)	.08
White non-British	100.5 (17.8-566.8)		
Other	165.0 (26.5-503.3)		
Education			

	Median (IQR) days	Kruskal-Wallis (df)	*p*
Education	120.0 (27.5-456.0)	.14 (1)	.71
Qualification not yet obtained	192.0 (29.5-566.0)		
Living situation			
Alone (or with children)	148.5 (61.5-702.5)	.00 (1)	.98
With others (e.g., family, friends)	129.0 (22.0-509.0)		
Relationship status			
Single	137.0 (29.8-588.3)	.13 (1)	.72
In a relationship	114.0 (22.3-361.5)		
Employment status			
Employed	74.00 (14.00-664.75)	2.03 (2)	.36
Student	98.50 (31.25-552.00)		
Unemployed	161.50 (59.75-470.75)		
Mode of onset			
Acute	17.0 (8.00-32.00)	127.29 (2)	.001*
Gradual	103 (81.0-143.0)		
Insidious	616.5 (328.5-979.0)		
Rural-Urban			
City and Town	115.0 (22.0-467.5)	2.08 (3)	.56
Town and Fringe	132.0 (20.0-643.0)		
Village	90.0 (54.5-759.5)		
Hamlet and Isolated Dwellings	211.0 (136.5-2320.3)		

** =<0.05 significance level
IQR-Interquartile range

The Relationship Between Socio-Demographic Factors and Mode of Onset of Psychosis

The relationships between socio-demographic factors, and mode of onset of psychosis are presented in Table 4. There was no significant association between mode of onset of psychosis and the following factors: age, gender, ethnicity, living circumstances, relationship status, and education. There was a weak association between employment status and the mode of onset of psychosis, (*x2* (2) = 9.26, *p* =.06); with employed participants having an acute onset of psychosis and unemployed participants having more gradual onset of psychosis.

Table 3

Socio-Demographic Variables and Mode of Onset of Psychosis.

	Acute N (%)	Gradual N (%)	Insidious N (%)	*x2(df)*	*p*
Age (N=155)					
Adolescents	5 (9.1)	4 (11.1)	14 (21.9)	4.36 (4)	.36
Emerging adults	29 (52.7)	19 (52.8)	29 (45.3)		
Adults	21 (38.2)	13 (36.1)	21 (32.8)		
Gender (N=155)					
Male	35(63.6)	26 (72.1)	49 (76.6)	2.43 (2)	.30
Female	20 (36.4)	10 (27.8)	15 (23.4)		
Ethnicity (N=146)					
White British	31 (59.6)	19 (55.9)	32 (53.3)	2.80 (4)	.59
White non-British	11 (21.2)	4 (11.8)	11 (18.3)		
Other	10 (19.2)	10 (32.4)	17 (28.3)		
Living circumstances (N=155)					
Alone (with children)	3 (5.5)	6 (16.7)	7 (10.9)	3.00 (2)	.22
With others	52 (94.5)	30 (83.3)	57 (89.1)		
Relationship status (N=152)					
Single	34 (64.2)	29 (80.6)	45 (71.4)	2.81 (2)	.25
In a relationship	19 (35.8)	7 (19.4)	18 (28.6)		
Employment (N=152)					
Employed	25 (46.3)	6 (16.7)	23 (37.1)	9.26 (4)	.06
Student	13 (24.1)	12 (33.3)	13 (21.0)		
Unemployed	16 (29.6)	18 (50.0)	26 (41.9)		
Education (N=142)					
Qualification not yet obtained	7 (14.0)	6 (16.7)	12 (21.4)	1.03 (2)	.60
Education	43 (86.0)	30 (83.3)	44 (78.6)		

Predictors of DUP

Logistic regression analyses were conducted to formally assess (1) the association between DUP and rural vs. urban status and (2) the associations between DUP and age categories. DUP, an outcome variable, was dichotomised into long and short. Due to missing data, 16 and 25 participants had to be excluded from the analyses to examine the differences in DUP by 1) rural-urban area; and 2) age categories, respectively.

First unadjusted odds ratios were estimated for the association between DUP and rural-urban area, (Model 1, Table 5), there was no evidence of significant association, OR = .94 CI .45 – 1.99, *p* =.88. The analysis was repeated in multivariable logistic regression, adjusting for age and gender (Model 2, Table 5) and finally, adding employment status and education in Model 3. However, no significant associations between DUP and the aforementioned factors were found. The estimated odd ratios and confidence intervals are included in Table 5.

Table 4

DUP and Rural Urban Status, Controlling for Age, Gender, and SES (N=139)

	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)
Rural/Urban			
Rural	.94 (.45-1.99)	.90 (.42-1.91)	.97 (.45-2.13)
Age		1.01 (.95-1.08)	1.00 (.93-1.08)
Gender (male)		1.77 (.82-3.84)	1.64 (.75-3.61)
Employment status			
Unemployed			1.23 (.54-2.79)
Student			.85 (.31-2.34)
Education			
No formal qualification			1.45 (.59-3.58)

OR- Odds ratio; CI-Confidence Intervals

The unadjusted odds ratios were estimated for the association between DUP (dependent variable) and age categories (factor variable), (Model 1, Table 6); no significant association was found for adolescents, OR = 1.47 CI .49 – 4.39, *p* = .49 and emerging adults, OR = .92 CI .43-1.98, *p* =.83, when compared to adults. The adjusted Model 2 included gender and ethnicity as confounding variable, and Model 3 was further adjusted by employment status and education. However, no significant associations were found. The estimated odds ratios and confidence intervals are included in Table 6.

Table 5

DUP and Age Categories, Controlling for Gender and Ethnicity, SES (N=130)

	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)
Age categories			
Adolescents	1.47 (.49-4.39)	1.69 (.54-5.28)	2.72 (.67-11.12)
Emerging adults	.92 (.43-1.98)	.90 (.41-2.00)	1.05 (.45-2.44)
Gender (male)		1.64 (.72-3.73)	1.57 (.68-3.63)
Ethnicity			
Other		1.44 (.63-3.31)	1.54 (.66-3.58)
White non-British		1.34 (.48-3.75)	1.42 (.50-4.06)
Employment			
Unemployed			1.32 (.57-3.05)
Student			.62 (.20-1.95)
Education			
No formal qualification			1.17 (.46-3.00)

OR- Odds ratio; CI-Confidence Intervals

Discussion

The Summary of the Main Findings

This study did not find any significant differences in DUP, based on socio-demographic factors (e.g., gender, ethnicity, employment status) and rural-urban area. There was also no significant association between socio-demographic factors and the mode of onset of psychosis. However, the findings revealed that there was a significant difference in DUP, based on the mode of onset of psychosis. Participants with an insidious mode of onset of psychosis had longer DUP. Moreover, participants who were employed were more likely to live in rural areas, and those who were unemployed were more likely to live in the city.

Some tentative trends across the findings were observed. Adolescents, and ‘other’ ethnic group were more likely to have longer DUP. However, when these were examined in multivariable regression analysis, the strength of evidence attenuated.

In terms of the mode of onset of psychosis, employed participants were observed to be more likely to have an acute mode of onset of psychosis, and unemployed participants a gradual mode of onset. However, these findings were not statistically significant and, therefore, should be treated with caution.

Comparison with Previous Studies

Socio-demographic Characteristics and DUP

The current sample consisted mostly of participants of younger age, who were of white British ethnic group, were students and employed, in contrast to studies conducted in inner cities (e.g., London and Nottingham) (Oduola et al., 2020; Morgan et al., 2006; Kirkbride et al., 2010). Moreover, in the current study, the majority of participants were graduates and lived with relatives, which differ to two thirds of participants who finished school when they were 16 years old; and less than a half of the sample who lived alone in the study conducted by Morgan et al. (2006). In terms of similarities, in line with the aforementioned studies, most of the participants were single. It is also worth noting that the catchment area of the current study includes a university city, which likely consists of students from the local universities and colleges. Moreover, the median DUP of the sample was 129 days, which was longer than 93, 63 and 69.5 days in the studies conducted by Oduola et al. (2020), Morgan et al. (2006) and Kirkbride et al. (2010), respectively. In general, the findings highlight some possible differences in characteristics of people with FEP who lived in the studied region, and the length of DUP.

The results showed no evidence of socio-demographic differences in DUP, which is in line with previous research findings that ethnicity (Anderson et al., 2015); gender (Cascio et al., 2012), employment status (Compton et al., 2008) and living situation (Morgan et al., 2006) are not associated with DUP. However, the findings contrast with other studies which indicate that being Black-Caribbean (Schoer et al., 2019), male (Apeldoorn et al., 2014), female (Hastrup et al., 2018), living alone or being unemployed (Oduola et al., 2020) contribute to longer DUP. The discrepancies in the findings across the studies could potentially be explained by the differences in samples' characteristics, as discussed above.

It is worth noting that the findings of the current study appear to show a slight trend in 'other' minority groups experiencing longer DUP. However, this 'other' category was based on a small, heterogeneous group of participants in an otherwise majority white British and white non-British sample. Nevertheless, this is a hypothesis that would warrant further investigation with a larger, more representative sample of ethnic minority participants that could be stratified further based on specific ethnic groups.

Rural vs. Urban Status and DUP

The present study showing no differences in DUP, by rural and urban area, is in contrast with the study conducted by Hastrup et al. (2018) which revealed that people who live in peripheral areas of Denmark have longer DUP. However, the findings are consistent with Thirthalli et al. (2017) who did not find a significant association between rural-urban areas and delays in accessing psychiatric services. It could be also argued whether characteristics of the neighbourhood such as social instability and perhaps social deprivation play a more important role in the length of DUP, as found by O'Donoghue et al. (2016). However, the study conducted in Southeast London neighbourhoods by Kirkbride et al. (2010) revealed that social neighbourhood factors (e.g., social cohesion) are not linked to DUP, but emphasized individual and familial determinants of treatment delays.

However, the results could also be understood taking into consideration the characteristics of the region and the study sample. Most participants lived in urban areas (70 percent) compared to rural areas (30 percent), which contrasts with Cheng et al. (2011) who found that only 36 percent of FEP clients, who were referred to an EI service between 2002-2007, lived in urban areas of Cambridgeshire. Additionally, the national statistics (ONS, 2011) reveal that 57.4 and 42.6 percent of Cambridgeshire and Peterborough population live in urban and rural areas, respectively. Thus, it could be argued whether the sample of the current study is representative of the rural population, and whether those who lived in rural areas did not come to the service and seek treatment despite experiencing psychosis. This treatment delay could be due to a travel distance, costs (Deaville, 2001) or a culture of being self-sufficient, which is more common in smaller communities (Fuller et al., 2000). It is also possible that there is a higher proportion of people with psychosis living in urban areas, which is supported by March et al. (2008) and Vassos et al. (2012). There may be other factors such as stigma (Muesser et al., 2020), poor social networks (Kalla et al., 2002), lack of family involvement (Morgan et al., 2006), which might play a more significant role in DUP, rather than the place where people with FEP live.

Age and DUP

As mentioned earlier, there was tentative evidence that adolescents experienced longer DUP, which is in line with previous studies (Dominguez et al., 2013; Schimmelmann et al., 2007). However, this evidence weakened in the multivariable regression analysis, and therefore the strength of the association did not hold. The lack of age group difference in DUP is supported by a systematic review conducted by Norman and Malla (2001). However, further investigation is needed with a larger sample size to confirm this hypothesis as the current sample consisted of only 14.8 percent of adolescents, which could have affected the results of the study. Those findings also raise the question of other factors that could possibly contribute to treatment delays, irrespectively of age. It is worth considering the complexity of pathways to care across all developmental groups. People with FEP are usually in contact with a range of professionals such as GPs, teachers, before they receive appropriate treatment (Anderson et al., 2013; Cratsely et al., 2008), which consequently could lead to longer DUP.

Mode of Onset of Psychosis

The significant association between the mode of onset of psychosis and DUP is in line with previous research (Morgan et al., 2006), supporting that the speed in which psychosis develops affects treatment delays. This is unsurprising as a gradual development of psychotic symptoms is more difficult to recognise and treat (Kanahara et al., 2013). In turn, people with FEP who experience an acute onset of psychosis, and a sudden change in their behaviour, are more likely to seek help and, others are able to better detect such prominent changes (Kanahara et al., 2013; Chen et al., 2005). This is in line with the observed trend that participants who were employed were more likely to have an acute mode of onset of psychosis, whilst unemployment was linked with more gradual mode of onset. This could be explained by the previous research which indicated that unemployment is linked to reduced social functioning that precedes psychosis, which consequently might lead to difficulties in identifying psychotic symptoms (Morgan et al., 2006; Fusar-Poli et al., 2010).

Limitations and Strengths

Thirty one percent of the initial cohort was excluded from the overall analysis and further 25 participants had to be excluded from the logistic regression analysis due to participants' missing data. Therefore, the study has a small sample size in comparison to the previous research with similar methodology, population characteristics (people with FEP), and sample size of 558 participants (Oduola et al., 2020). Therefore, a small sample size could have affected the overall findings of this study and reduced its generalisability. Moreover, the multiple testing and lack of a priori plan of correction (e.g., using a more conservative significance threshold) could have also affected the results of the study, and therefore, these should be interpreted with caution.

The dichotomisation of DUP, with a cut-off point of six months, was used to conduct the multivariable regression analysis. This threshold was applied as the delay longer than six months can have a significant impact on psychotic symptoms (Cechnicki et al., 2014). Even though the study used a standardised instrument to measure DUP, the data of the onset of psychotic symptoms and the first access to the secondary mental health service were extracted from the clinical records, therefore, the quality of the data was based on the robustness of the clinician's documentation. This therefore might have included errors and biases. In addition, the ONS categorisation of the rural-urban areas is solely based on the population density, and it does not take into consideration cultural, economic, or social differences (Bibby & Brindley, 2013). Whilst the researchers took into consideration education and occupation factors in the analysis, a more formal measure of socio-economic status across rural-urban areas, could have been taken into consideration. DUP was measured from the first experienced symptoms of psychosis to the first contact with secondary mental health services ('short DUP' and 'long DUP' were defined as the delay, which lasted less or more than six months, respectively). While an insidious mode of onset was measured if the psychotic symptoms develop for more than six months, gradual within six months, and acute if the symptoms develop for less than a month. Moreover, the mode of onset assesses the speed of development of psychotic symptoms up to the point of frank psychotic symptoms, therefore recognising symptoms may be more important than the point at which someone contacts a service for treatment (i.e., DUP). Taking into consideration the interdependency in the definitions of these two constructs, a strong link between them is not surprising. Therefore, the significant finding perceived as meaningful should be treated with cautious.

The findings of this study were discussed within the constraint of a conventional *p*-value of .05, which has its own limitations (Alifieris et al., 2012). Moreover, the sample size, which was small, could lead to power issue and explain why some of the differences did not reach the significant level. Therefore, the results with significance level less than .1 were not omitted and were discussed with caution.

One of the main strengths of this study is that it attempted to measure the association between rural-urban areas and DUP, by including the areas which are formally categorised as ‘rural’ and ‘urban’ by ONS (2011). This has been lacking in the literature. However, a future study with a larger sample size could provide a better understanding of the differences in DUP based on geographical areas in the UK. This study also addressed the gap in the literature and added to the existing evidence on a range of factors such as socio-demographic, developmental stages, and clinical factors which impact on DUP. Moreover, the screening procedures were thorough resulting in high number of participants being excluded. However, this meant that people with FEP were carefully identified. Therefore, the current findings give a clearer picture of treatment delays in people experiencing psychosis for the first time.

Clinical Implications

The findings showing that more gradual ways of developing psychosis are associated with longer DUP, could inform EI services to implement strategies directed towards recognising less noticeable and more gradually developed symptoms of psychosis (e.g., social isolation or withdrawal). A timely and efficient support provided for those who suffer from psychosis and increased awareness among professionals and communities about early psychotic symptoms could be applied to reduce treatment delays (Cratsley et al., 2008). The current study showed that there might be more complex processes which are beyond the factor of where people live or individual characteristics, which contribute to the treatment delays. Therefore, targeting social factors (e.g., improving family involvement) could be considered (Morgan et al., 2006). It could be worth including clients who had previous contact with services, and which had to be excluded from this study; and those who perhaps receive treatment from their local GPs and have not accessed any further treatment from the secondary mental health services, and therefore were not successfully detected by services. Given the characteristics of the current sample and the region, these findings could be of greatest value to the local EI services with some national and international interest.

Conclusions

Previous research revealed the significant impact of DUP on treatment outcomes (Marshall et al., 2005); therefore, understanding what factors contribute to treatment delays has been brought to the attention of researchers and clinicians. Even though the current study found no socio-demographic and rural-urban differences in DUP, in the context of the studied region; there was some tentative evidence in relation to age and ethnicity, but further research with bigger sample size is warranted for the findings to be generalised.

Participants with insidious mode of onset of psychosis were found to have longer DUP, which might suggest that EI services could direct their efforts towards people with FEP, whose psychotic symptoms develop in more gradual way.

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Appendix A: The Relationship Between Factors and Rural-Urban Status.

The relationship between socio-demographic, clinical factors and rural-urban areas are presented in Table 3. There were no significant associations between rural-urban area, and the following factors: age, ethnicity, living circumstances, relationship status, education, mode of onset of psychosis and DUP. However, there was a significant association between rural-urban area and employment status (*x2* (2) = 8.13, *p* < .05). People who were unemployed were more likely to live in urban areas, while people who were employed, in rural areas. There was some tentative evidence that women were less likely to have a rural status, however, the association was non-significant, (*x2* (1) = 2.85, *p* =.09).

Table 6

Socio-Demographic and Clinical Characteristics by Rural-Urban Area.

	Rural N (%)	Urban N (%)	*x2(df)*	*p*
Age (N=155)				
Adolescents	11 (23.9)	12 (11.0)	4.56 (2)	.10
Emerging adults	19 (41.3)	58 (53.2)		
Adults	16 (34.8)	39 (35.8)		
Gender (N=155)				
Male	37 (80.4)	73 (67.0)	2.85 (1)	.09
Female	9 (19.6)	36 (33.0)		
Ethnicity (N=146)				
White British	26 (61.9)	56 (53.8)	.87 (2)	.65
White non-British	7 (16.7)	19 (18.3)		
Other	9 (21.4)	29 (27.9)		
Living circumstances (N=155)				
Alone (with children)	4 (8.7)	12 (11.0)	.19 (1)	.67
With others	42 (91.3)	97 (89.9)		
Relationship status (N=152)				
Single	29 (63.0)	79 (74.5)	2.06 (1)	.15
In a relationship	17 (37.0)	27 (25.5)		
Employment (N=152)				
Employed	22 (51.2)	32 (29.4)	8.13 (2)	.02*
Student	11 (25.6)	27 (24.8)		
Unemployed	10 (23.3)	50 (45.9)		

	Rural N (%)	Urban N (%)	*x2(df)*	*p*
Education (N=142)				
No formal qualification	5 (3.5)	20 (14.1)	1.52 (1)	.22
Educated	38 (26.8)	79 (55.6)		
Mode of onset				
Acute	14 (30.4)	41 (37.6)	.78 (2)	.68
Gradual	12 (26.1)	24 (22.0)		
Insidious	20 (43.5)	44 (40.4)		
DUP				
Short	26 (56.6)	62 (56.9)	.00 (1)	.97
Long	20 (43.5)	47 (43.1)		

* =<0.05 significance level

Chapter 5: Additional Methodology

The Clinical Records Anonymisation and Text Extraction (CRATE) system

The data used for the empirical project were extracted from the Cambridgeshire and Peterborough NHS Foundation Trust Research Database (CPFTRD) using the Clinical Records Anonymisation and Text Extraction (CRATE) system (Cardinal, 2017). CRATE is a software tool developed by Cardinal (2017). It consists of approximately 260,000 clients who have received care from the CPFT services (CPFT, n.d.). CRATE allows clinicians and researchers to screen clinical notes and documents, which were previously anonymised (all identifiable information such as names, date of birth or address were removed from the clinical records). CRATE is based on the Case Record Interactive Search (CRIS) system, which is used by the South London and Maudsley NHS Trust (SLaM). Both systems were developed to support research (e.g., enabling efficient data collection), with one of the main goals to improve mental health services (CPFT, n.d.). Therefore, CRATE and CRIS systems have been widely used for the purpose of research (Osimo et al., 2021; Kershenbaum et al., 2021; Oduola et al., 2019b).

Data Extraction and Coding

For the empirical paper, all variables were extracted from CPFTRD using CRATE system. The research database was screened manually by the researcher; this includes for each individual participant, clinical case notes and the following documents produced by professionals involved in patient's care such as a core assessment (e.g., background information, presenting problems, past psychiatric history, reasons for referrals), a summary plan, and a discharge summary. Moreover, the information was also extracted from the system and the search terms such as 'delusions'; 'psychos*'; 'psychosis'; 'voices' were used to screen the aforementioned documents to increase the efficiency of finding the data. Extracting and coding the data manually from the clinical notes and documents, especially to collect a precise date of the onset of psychosis, required a thorough examination of the information, which was a time-consuming process. Therefore, a two-year time frame (2013-2015) was proposed for this project. This specific timeframe was also in line with the previous research conducted by Oduola et al. (2019b). All participants who were referred to CAMEO between 2013-2015, were screened and assessed for psychotic symptoms, using the adapted version of the Personal and Psychiatric History Schedule (PPHS; World Health Organisation [WHO], 1996). This procedure was adapted from the previous research (Oduola et al., 2020; Morgan et al., 2006). This allowed measurement of DUP (calculated as the time between the onset of psychotic symptoms (e.g., delusions, hallucinations, thought and speech disorder, bizarre or inappropriate behaviour) and the first contact with a secondary mental health service for psychosis). This was based on information from the clinical notes and self-reported data. The definition and classification of DUP was used in line with previous studies (Morgan et al., 2006; Craig et al., 2000).

The mode of onset of psychosis examines how long and how quickly the psychotic symptoms develop (Compton et al., 2008). This was also measured using the PPHS (WHO, 1996), consistent with previous research (Oduola et al., 2019; Morgan et al., 2006). For more information on specific categories for mode of onset of psychosis, please see Table 1.

Socio-demographic predictors and their categories have been carefully selected for this thesis as they were established as important predictors of psychosis, its outcomes and DUP, based on the previous research (Oduola & Craig, 2017). The data were extracted from the research database manually and were based on the Medical Research Council

Sociodemographic Schedule (MRC-SDS; Mallet, 1997). For the information on classification of the socio-demographic variables please see Table 1.

The rural-urban classification was categorised in line with the Office for National Statistics ([ONS], 2011) (see Figure 1). ONS (2011) developed a rural-urban classification of geographical areas of England and Wales. This is defined by calculating which region can be categorised as ‘a built-up’ area. The cut-off point for urban (a built-up) area is 10,000 people or more; and further categories (e.g., cities, towns, or villages) are based on population density. As CRATE system anonymises identifiable information such as postcodes, the researcher used the Lower Layer Super Output Area classification and the rural-urban classification introduced by Bibby and Brindley (2013), which is often used for the analytical purpose. Therefore, the geographical areas of the Peterborough and Cambridgeshire which constituted of ‘major conurbations’, ‘minor conurbation’, ‘city and town’, were classified as urban. While ‘town and fringe’, ‘village’ and ‘hamlets and isolated dwellings’ were categorised as a rural area (Bibby & Brindley, 2013; ONS, 2011) (See Figure 1).

Figure 1

Rural-Urban Classifications Adapted from Bibby and Brindley (2013)

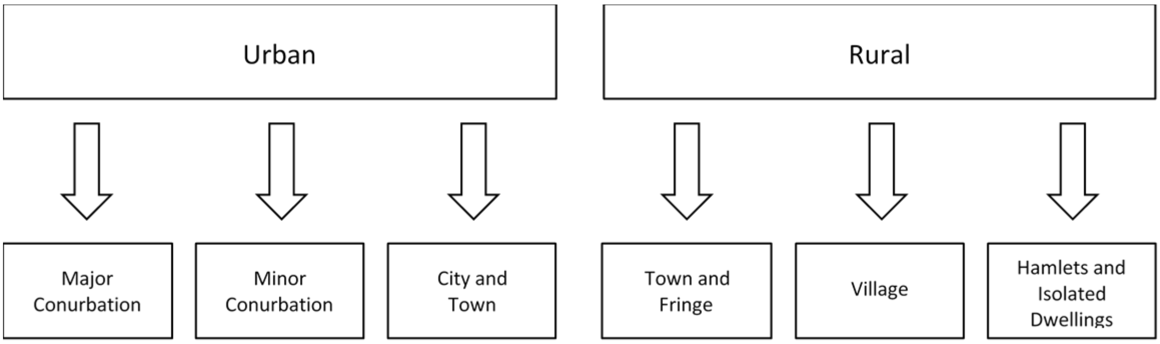

Table 1

The Steps to Extracting and Coding Data

Steps	The data extracted from database	Simplistic procedure and categories
1	DUP	Calculated using the time between the date of onset of psychosis and the date of the first contact with the secondary mental health service.
2	The mode of onset of psychosis	Identified through calculating the duration/ speed of the development of the symptoms: 1) abrupt> hours, days 2) acute>1 week 3) moderately acute >1 month 4) gradual >6 months 5) insidious= <6 months
3	Age	Manually extracted from the system and coded
4	Gender	Manually extracted from the system and coded
5	Ethnicity	Manually extracted from the system and coded according to the 2011 UK Census categories
6	Living circumstances	Manually extracted from the system and coded: 1) Living alone, or with children 2) living with a partner/ spouse / parents or with other family member 3) Other (e.g., with friends/ flatmates) (MRC-SDS; Mallet, 1997)
7	Employment status	Manually extracted from the system and coded: 1) employed 2) student 3) unemployed (MRC-SDS; Mallet, 1997)
8	Level of education	Manually extracted from the system and coded: 1) school, no qualification 2) school with qualifications 3) Tertiary or Further (e.g., A-levels) 4) Vocational 5) University (undergraduate) 6) Higher (postgraduate) (MRC-SDS; Mallet, 1997)
9	Relationship status	Manually extracted from the system and coded: 1) single 2) married 3) in a relationship 4) divorced, separated (MRC-SDS; Mallet, 1997)
10	Rural vs Urban classification	Categorised using the rural-urban classification (Bibby & Brindley, 2013).

Ethical Considerations

The CRATE system has been approved by NHS Research Ethics Committee (REC) (17/EE/0442) and CPFT's Research and Development department for secondary analysis. This research project was granted the Health Research Authority (HRA) approval (reference: 20/NI/0035) and the local CPFTRD Oversight Committee approval (reference: M00964). It was conducted in line with the British Psychological Society (BPS) Code for Human Ethics and Conduct (BPS, 2014). The study used anonymised Research Database and the researcher did not have access to identifiable participants' information nor any personal data was accessed by the researcher. Therefore, there was no potential physical or psychological risks for participants. The researcher was not allowed to approach any participant, which could have potentially caused any additional distress. CRATE is based on the opt out system, therefore, the records of clients who do not wish for their data to be stored in the database, were removed. In line with the CRATE ethical approval and as the researcher did not contact participants, they were not approached for consent or debriefing. However, the findings will be available for the public. The study followed the Data Protection Act (1998). The data was held and stored securely within the Trust firewall; and was analysed using CPFT computer and a statistical programme as approved by the Trust.

Chapter 6: General Discussion and Critical Review

The aims of this chapter are to provide the summary of the findings of the systematic review and the empirical paper; to discuss the strengths and the weaknesses of the thesis portfolio; and to consider the theoretical and clinical implications, and the future research.

Summary of the Findings

The systematic review examined social determinants impacting on the duration of untreated psychosis (DUP) in people with first episode of psychosis (FEP). The review included both qualitative and quantitative studies which examine stigma or/and social networks/social support and DUP. The synthesis of the findings revealed that longer treatment delay was determined by stigma (including: an internalised stigma such as feelings of guilt, sense of failure or embarrassment, fear of being discriminated and stigmatised by others which often leads to avoidance-type behaviours, and fear of mental health services). The findings were less coherent in relation of the role of social networks and social support in DUP. Some studies showed that social networks and social support lead to shorter DUP, while others did not find association between close social networks and DUP. However, the findings also showed that shorter DUP was linked to high quality of close social networks and high number of social contacts. The type and the role of social networks also play an important role in predicting DUP. Families and friends, who were supportive and considerate, were determinants of shorter DUP. However, those families, who minimise and ignore psychotic experiences, become the barrier to treatment as, in turn, people with FEP felt hesitant to ask them for help. In terms of the communities, the findings were mixed. Some were described as helpful and supportive, which led to shorter DUP. Other studies reported conflicting results stating that strong community connectedness but also, in turn, communities which were perceived as unhelpful, were perceived as barriers to treatment. Finally, the interactions between stigma and social networks were found. For instance, lack of social support due to culturally rooted stigma led to longer DUP. This showed that there are interacting processes between determinants, which should be further considered if services make initiatives to decrease the length of DUP for people with FEP.

In terms of the empirical paper, the data of 155 participants with FEP were extracted using the anonymised electronic system called Clinical Records Anonymisation and Text Extraction (CRATE) developed by Cardinal (2017). The study examined the individual, socio-demographic (e.g., age, gender, ethnicity, level of education, employment status), clinical (mode of onset of psychosis) and environmental (rural-urban status) factors which are associated with DUP in people with FEP. The results revealed that there was no evidence that the place where people live (rural or urbanised area) is associated with DUP. However, participants who had an insidious mode of onset were found to have longer DUP. There was difference in DUP based on socio-demographic factors such as gender, ethnicity differed in DUP; however, there was a weak evidence revealing that adolescents and minority groups might have longer treatment delays, but further research is warranted.

The findings of both the systematic review, and the empirical paper, provided a picture of a broad range of determinants of DUP. The findings could suggest that there are multiple factors and complex processes between them, which impact on DUP.

Strengths of the Portfolio

The main strength of this thesis portfolio is that it examined a range of potential determinants (socio-demographic, clinical and environmental) of DUP for people with FEP. Therefore, the findings provide important information which factors contribute to treatment delays, that could be of great interest for early intervention (EI) services aiming to reduce DUP. The systematic review included both qualitative and quantitative studies, and examined stigma, social networks/social support, and the preliminary links between those factors, which provides more evidence to the existing research on the social determinants of DUP. In terms of the empirical paper, one of the main strengths is that it was conducted in urban and rural areas in the UK; thereby, enabling understanding of whether the area where people live affect the delays in accessing treatment. Given that urbanicity was found to play a significant role in developing psychosis (Burns & Esterhuizen, 2008), it was surprising that there has been limited research on the environmental factors impacting DUP, conducted internationally, and in the UK context.

Limitations of Thesis Portfolio

Both the systematic review and empirical paper have limitations; therefore, the findings should be interpreted tentatively. In terms of the systematic review, the multidimensionality and complexity of the factors that impact on DUP means that it was not possible to examine all potential social determinants, which could be associated with DUP, and this could be considered by future research. Moreover, this review only included literature, which was published in English, and excluded findings from unpublished sources, which potentially missed some important data. It is also noteworthy that majority of the studies included in the review that investigated stigma used a qualitative design, while studies that investigated social networks/ social support mostly have a quantitative design, which could have also biased the findings. Moreover, only eight studies were conducted in the UK, which raises the question about the cultural differences across the findings, and whether they can be generalised solely into the UK context. Therefore, cultural differences regarding stigma, social networks and social support should be further explored. Moreover, the direction of the relationship between social determinants and DUP could be questioned. For instance, Thorup et al. (2006) suggests that people with long untreated psychosis, often isolate and withdraw themselves from others, and this consequently leads to a decline in social networks and poorer social support. This might suggest that a long DUP might, in turn, be a determinant of poor social network.

The empirical paper used a stringent data extraction process. This can be perceived as a strength of the study as it only included participants who did not have previous contact with mental health services for FEP. However, it might have excluded participants with more complex pathways to care. Moreover, the study also included participants who were 14 to 35 years old as this was the age range of people with FEP who were accepted by EI service between 2013 and 2015. However, the age range of people accepted to EI services increased to 65 years old in 2016 (NHS England, 2016). Therefore, one can question whether the findings would be still consistent for participants who are between 35 and 65 years are old, as this evidence is still limited in the literature.

Theoretical Implications

The findings of this thesis portfolio can be also discussed taking into consideration the Health Belief Model (Rosenstock, 1966) and the Model of Healthcare Utilization developed by Anderson (1995). The Health Belief Model (2005) suggests that people seek help based on perceived benefits and barriers to receive treatment. Current findings are in line with the model as the results revealed that people with FEP often feel ashamed and embarrassed about their psychotic experiences, are worried that other people could judge and discriminate them and are afraid of accessing mental health services due to perceived stigma. This becomes a barrier to seeking help as people with FEP often are unwilling to disclose psychotic symptoms, and may minimize or avoid their psychotic experiences, which results in longer DUP. Moreover, in line with the Model of Healthcare Utilisation (Anderson, 1995), the findings of the thesis portfolio demonstrate that good family support and community availability increase the chances that a person with FEP will seek help. In contrast to the model, most of the socio-demographic characteristics did not play a significant role in treatment delays. Moreover, as this study also did not find evidence that rural-urban status is associated with DUP, such findings might not be in line with Anderson’s model (1995) which highlights service’ availability and accessibility as an important factor in help-seeking behaviour.

Clinical Implications

By understanding the factors which affect DUP, the EI services could be more informed about the type of interventions aimed to reduce treatment delays for people with FEP. Taking into consideration the findings of this thesis portfolio, community level interventions could be considered. For instance, services could promote and implement public awareness campaigns and educational interventions to reduce stigma, related to psychosis, and mental health services, within the communities (e.g., family, friends, schools, work). Anti-stigma campaigns have been found to be effective in reducing stigma of mental health among pubic (Corrigan & O'Shaughnessy, 2007). However, a previous systematic review revealed that there is no evidence that providing just educational interventions reduces self-stigma for people with psychosis (Griffiths et al., 2014). Therefore, the combination of educational interventions along with strengthening social networks/social support might be more beneficial for people with FEP. For instance, befriending programmes for people who suffer from psychosis improve social contacts and reduce social isolation (Priebe et al., 2020). Moreover, providing peer support can also reduce stigmatisation, strengthen social network, and improve recovery (Mahlke et al., 2014). Taking into consideration the role of Clinical Psychology within the potential community initiatives, perhaps this should be less focused on an individual approach but aimed towards wider systemic interventions. Moreover, the findings of the empirical paper revealed that an insidious mode of onset of psychosis is associated with longer treatment delays. Therefore, interventions which include strategies to help recognise early signs of psychosis, could be implemented within statutory healthcare services for professionals and within non-statutory services (e.g., schools, workplaces, local charities, or churches). Even though the implementation of the interventions is usually a long and costly process, prevention programmes were found to bring major savings to the NHS (NHS, 2016b). Given the cost-effectiveness of EI services (Tsiachristas et al., 2016) attempts to invest in preventive activities to reduce treatment delays, might be valuable in the long-term, but this should be further investigated.

Future Research

Future research should consider expanding on the determinants of DUP; for instance, by including, family factors (e.g., family functioning), service-related factors (e.g., complex referral pathways) and stigma and social network/ social support in the context of cultural beliefs. It could be also worth including perspectives of significant others and professionals to further understand factors which contribute to longer DUP and factors (such as strong social support) which might decrease the length of treatment delays. Future research could also include a broader understanding of the environmental factors, which are beyond rural-urban categorisation. Factors such as social capital, neighbourhood deprivation and fragmentation were found to be associated with higher risk of developing psychosis and social instability was found to be a determinant of longer DUP (O’Donoghue et al., 2016). This is important as to be able to reduce DUP, a more thorough understanding of multilevel determinants is needed.

Conclusion

In general, this thesis portfolio extends our understanding of a range of factors which play a significant role in DUP for people with FEP. This not only provides further evidence to the existing literature but also could help EI services in directing their interventions and initiatives to reduce the time during which psychosis is untreated.

However, to successfully reduce DUP further research is needed to explore more complex processes which might lead to treatment delays for individuals experiencing psychosis.

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Appendices

Appendix A: Journal Submission Guidelines: Clinical Review Journal

Appendix B: Journal Submission Guidelines: British Journal of Clinical Psychology

Appendix C: REC Ethical Approval

Appendix D: Cambridgeshire and Peterborough NHS Foundation Trust R&D approval

Appendix A: **Journal Submission Guidelines: Clinical Review Journal**

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It is authors' responsibility to ensure their reviews are comprehensive and as up to date as possible (at least to 3 months within date of submission) so the data are still current at the time of publication. Authors are referred to the PRISMA Guidelines (http://www.prisma-statement.org/) for guidance in conducting reviews and preparing manuscripts. Adherence to the Guidelines is not required, but is recommended to enhance quality of submissions and impact of published papers on the field.

Appendices

If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information

Title. Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible. **Note: The title page should be the first page of the manuscript document indicating the author's names and affiliations and the corresponding author's complete contact information.**

Author names and affiliations. Where the family name may be ambiguous (e.g., a double name), please indicate this clearly. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name, and, if available, the e-mail address of each author within the cover letter.

Corresponding author. Clearly indicate who is willing to handle correspondence at all stages of refereeing and publication, also post-publication. **Ensure that telephone and fax**

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Highlights

Highlights are mandatory for this journal as they help increase the discoverability of your article via search engines. They consist of a short collection of bullet points that capture the novel results of your research as well as new methods that were used during the study (if any). Please have a look at the examples here: example Highlights.

Highlights should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point).

Abstract

A concise and factual abstract is required (not exceeding 200 words). This should be typed on a separate page following the title page. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separate from the article, so it must be able to stand alone. References should therefore be avoided, but if essential, they must be cited in full, without reference to the reference list.

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Although a graphical abstract is optional, its use is encouraged as it draws more attention to the online article. The graphical abstract should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership. Graphical abstracts should be submitted as a separate file in the online submission system. Image size: Please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more. The image should be readable at a size of 5 × 13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files. You can view Example Graphical Abstracts on our information site.
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Keywords

Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

Abbreviations

Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

Acknowledgements

Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

Formatting of funding sources

List funding sources in this standard way to facilitate compliance to funder's requirements:

Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa].

It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.

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Footnotes

Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors can build footnotes into the text, and this feature may be used. Otherwise, please indicate the position of footnotes in the text and list the footnotes themselves separately at the end of the article. Do not include footnotes in the Reference list.

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- Ensure that color images are accessible to all, including those with impaired color vision.

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TIFF (or JPEG): Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi.
TIFF (or JPEG): Combinations bitmapped line/half-tone (color or grayscale), keep to a minimum of 500 dpi.
Please do not:
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- Supply files that are too low in resolution;
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Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

References

Citations in the text should follow the referencing style used by the American Psychological Association. You are referred to the most recent publication manual of the American Psychological Association. Information can be found at https://apastyle.apa.org/

Citation in text

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

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As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

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This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

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References should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters "a", "b", "c", etc., placed after the year of publication. **References should be formatted with a hanging indent (i.e., the first line of each reference is flush left while the subsequent lines are indented).**

Examples: Reference to a journal publication: Van der Geer, J., Hanraads, J. A. J., & Lupton R. A. (2000). The art of writing a scientific article. *Journal of Scientific Communications,* 163, 51-59.

Reference to a book: Strunk, W., Jr., &White, E. B. (1979). *The elements of style.* (3rd ed.). New York: Macmillan, (Chapter 4).

Reference to a chapter in an edited book: Mettam, G. R., & Adams, L. B. (1994). How to prepare an electronic version of your article. In B.S. Jones, & R. Z. Smith (Eds.), *Introduction to the electronic age* (pp. 281-304). New York: E-Publishing Inc.

[dataset] Oguro, M., Imahiro, S., Saito, S., Nakashizuka, T. (2015). *Mortality data for Japanese oak wilt disease and surrounding forest compositions.* Mendeley Data, v1. http://dx.doi.org/10.17632/xwj98nb39r.1

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Supplementary material

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Below are a number of ways in which you can associate data with your article or make a statement about the availability of your data when submitting your manuscript. If you are sharing data in one of these ways, you are encouraged to cite the data in your manuscript and reference list. Please refer to the "References" section for more information about data citation. For more information on depositing, sharing and using research data and other relevant research materials, visit the research data page.

Data linking

If you have made your research data available in a data repository, you can link your article directly to the dataset. Elsevier collaborates with a number of repositories to link articles on ScienceDirect with relevant repositories, giving readers access to underlying data that gives them a better understanding of the research described.

There are different ways to link your datasets to your article. When available, you can directly link your dataset to your article by providing the relevant information in the submission system. For more information, visit the database linking page.

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Appendix B: **Journal Submission Guidelines: British Journal of Clinical Psychology**

Accessed July 11, 2021 from
https://bpspsychub.onlinelibrary.wiley.com/hub/journal/20448260/homepage/forauthors.html

1. SUBMISSION

Authors should kindly note that submission implies that the content has not been published or submitted for publication elsewhere except as a brief abstract in the proceedings of a scientific meeting or symposium.

Once the submission materials have been prepared in accordance with the Author Guidelines, manuscripts should be submitted online at http://www.editorialmanager.com/bjcp

Read more details on how to use Editorial Manager.

All papers published in the British Journal of Clinical Psychology are eligible for Panel A: Psychology, Psychiatry and Neuroscience in the Research Excellence Framework (REF).

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By submitting a manuscript to or reviewing for this publication, your name, email address, and affiliation, and other contact details the publication might require, will be used for the regular operations of the publication, including, when necessary, sharing with the publisher (Wiley) and partners for production and publication. The publication and the publisher recognize the importance of protecting the personal information collected from users in the operation of these services, and have practices in place to ensure that steps are taken to maintain the security, integrity, and privacy of the personal data collected and processed. You can learn more at https://authorservices.wiley.com/statements/data-protection-policy.html.

Preprint policy:

This journal will consider for review articles previously available as preprints. Authors may also post the submitted version of a manuscript to a preprint server at any time. Authors are requested to update any pre-publication versions with a link to the final published article.

2. AIMS AND SCOPE

The British Journal of Clinical Psychology publishes original research, both empirical and theoretical, on all aspects of clinical psychology:

clinical and abnormal psychology featuring descriptive or experimental studies

aetiology, assessment and treatment of the whole range of psychological disorders irrespective of age group and setting biological influences on individual behaviour

studies of psychological interventions and treatment on individuals, dyads, families and groups

For specific submission requirements, read the Author Guidelines.

The Journal is catholic with respect to the range of theories and methods used to answer substantive scientific problems. Studies of samples with no current psychological disorder will only be considered if they have a direct bearing on clinical theory or practice.

The following types of paper are invited:

papers reporting original empirical investigations;

theoretical papers, provided that these are sufficiently related to empirical data;

review articles, which need not be exhaustive, but which should give an interpretation of the state of research in a given field and, where appropriate, identify its clinical implications;

Brief Reports and Comments.

3. MANUSCRIPT CATEGORIES AND REQUIREMENTS

Articles should be no more than 5000 words (excluding the abstract, reference list, tables and figures). Brief reports should not exceed 2000 words and should have no more than one table or figure. Any papers that are over this word limit will be returned to the authors. Appendices are included in the word limit; however online appendices are not included.

In exceptional cases the Editor retains discretion to publish papers beyond this length where the clear and concise expression of the scientific content requires greater length (e.g., explanation of a new theory or a substantially new method). Authors must contact the Editor prior to submission in such a case.

Refer to the separate guidelines for Registered Reports.

All systematic reviews must be pre-registered.

4. PREPARING THE SUBMISSION

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British Journal of Clinical Psychology now offers free format submission for a simplified and streamlined submission process.

Before you submit, you will need:

Your manuscript: this can be a single file including text, figures, and tables, or separate files – whichever you prefer. All required sections should be contained in your manuscript, including abstract, introduction, methods, results, and conclusions. Figures and tables should have legends. References may be submitted in any style or format, as long as it is consistent throughout the manuscript. If the manuscript, figures or tables are difficult for you to read, they will also be difficult for the editors and reviewers. If your manuscript is difficult to read, the editorial office may send it back to you for revision.

The title page of the manuscript, including a data availability statement and your co-author details with affiliations. (Why is this important? We need to keep all co-authors informed of the outcome of the peer review process.) You may like to use this template for your title page.

Important: the journal operates a double-blind peer review policy. Anonymise your manuscript and prepare a separate title page containing author details. (Why is this important? We need to uphold rigorous ethical standards for the research we consider for publication.)

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To submit, login at https://www.editorialmanager.com/bjcp/default.aspx and create a new submission. Follow the submission steps as required and submit the manuscript.

If you are invited to revise your manuscript after peer review, the journal will also request the revised manuscript to be formatted according to journal requirements as described below.

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Parts of the Manuscript

The manuscript should be submitted in separate files: title page; main text file; figures/tables; supporting information.

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You may like to use this template for your title page. The title page should contain:

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A short running title of less than 40 characters;

The full names of the authors;

The author's institutional affiliations where the work was conducted, with a footnote for the author’s present address if different from where the work was conducted;

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Acknowledgments.

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Please refer to the journal's Authorship policy in the Editorial Policies and Ethical Considerations section for details on author listing eligibility. When entering the author names into Editorial Manager, the corresponding author will be asked to provide a CRediT contributor role to classify the role that each author played in creating the manuscript. Please see the Project CRediT website for a list of roles.

Abstract

Please provide a structured abstract under the headings: Objectives, Methods, Results, Conclusions. For Articles, the abstract should not exceed 250 words. For Brief Reports, abstracts should not exceed 120 words.

Articles which report original scientific research should also include a heading 'Design' before 'Methods'. The 'Methods' section for systematic reviews and theoretical papers should include, as a minimum, a description of the methods the author(s) used to access the literature they drew upon. That is, the abstract should summarize the databases that were consulted and the search terms that were used.

Keywords

Provide appropriate keywords.

Acknowledgments

Contributions from anyone who does not meet the criteria for authorship should be listed, with permission from the contributor, in an Acknowledgments section. Financial and material support should also be mentioned. Thanks to anonymous reviewers are not appropriate.

Practitioner Points

All articles must include Practitioner Points – these are 2-4 bullet points, following the abstract, with the heading 'Practitioner Points'. These should briefly and clearly outline the relevance of your research to professional practice. (The Practitioner Points should be submitted in a separate file.)

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As papers are double-blind peer reviewed, the main text file should not include any information that might identify the authors.

The main text file should be presented in the following order:

Title

Main text

References

Tables and figures (each complete with title and footnotes)

Appendices (if relevant)

Supporting information should be supplied as separate files. Tables and figures can be included at the end of the main document or attached as separate files but they must be mentioned in the text.

As papers are double-blind peer reviewed, the main text file should not include any information that might identify the authors. Do not mention the authors' names or affiliations and always refer to any previous work in the third person.

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References

References in published papers are formatted according to the Publication Manual of the American Psychological Association (6th edition). However, references may be submitted in any style or format, as long as it is consistent throughout the manuscript.

Tables

Tables should be self-contained and complement, not duplicate, information contained in the text. They should be supplied as editable files, not pasted as images. Legends should be concise but comprehensive – the table, legend, and footnotes must be understandable without reference to the text. All abbreviations must be defined in footnotes. Footnote symbols: †, ‡, §, ¶, should be used (in that order) and *, **, *** should be reserved for P-values. Statistical measures such as SD or SEM should be identified in the headings.

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Basic figure requirements for figures submitted with manuscripts for initial peer review, as well as the more detailed post-acceptance figure requirements.

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Colour figures. Figures submitted in colour may be reproduced in colour online free of charge. Please note, however, that it is preferable that line figures (e.g. graphs and charts) are supplied in black and white so that they are legible if printed by a reader in black and white. If an author would prefer to have figures printed in colour in hard copies of the journal, a fee will be charged by the Publisher.

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For guidelines on editorial style, please consult the APA Publication Manual published by the American Psychological Association. The following points provide general advice on formatting and style.

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Abbreviations: In general, terms should not be abbreviated unless they are used repeatedly and the abbreviation is helpful to the reader. Initially, use the word in full, followed by the abbreviation in parentheses. Thereafter use the abbreviation only.

Units of measurement: Measurements should be given in SI or SI-derived units. Visit the Bureau International des Poids et Mesures (BIPM) website for more information about SI units.

Effect size: In normal circumstances, effect size should be incorporated.

Numbers: numbers under 10 are spelt out, except for: measurements with a unit (8mmol/l); age (6 weeks old), or lists with other numbers (11 dogs, 9 cats, 4 gerbils).

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Accurate and complete reporting enables readers to fully appraise research, replicate it, and use it. Authors are encouraged to adhere to recognised research reporting standards.

We also encourage authors to refer to and follow guidelines from:

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Funding

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Finally, if submitting authors have any questions about the data sharing policy, access the FAQs for additional detail.

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9. EDITORIAL OFFICE CONTACT DETAILS

For help with submissions, please contact: Hannah Wakley, Associate Managing Editor (bjc@wiley.com) or phone +44 (0) 116 252 9504.

Author Guidelines updated 14th October 2019

Appendix C: REC Ethical Approval

Ymchwil Iechyd
a Gofal Cymru
Health and Care
Research Wales

NHS
Health Research
Authority

Email: hra.approval@nhs.net
HCRW.approvals@wales.nhs.uk

Dr Sheri Oduola
University of East Anglia
Norwich Research Park
Norwich
NR4 7TJ

02 March 2020

Dear Dr Oduola

HRA and Health and Care Research Wales (HCRW) Approval Letter

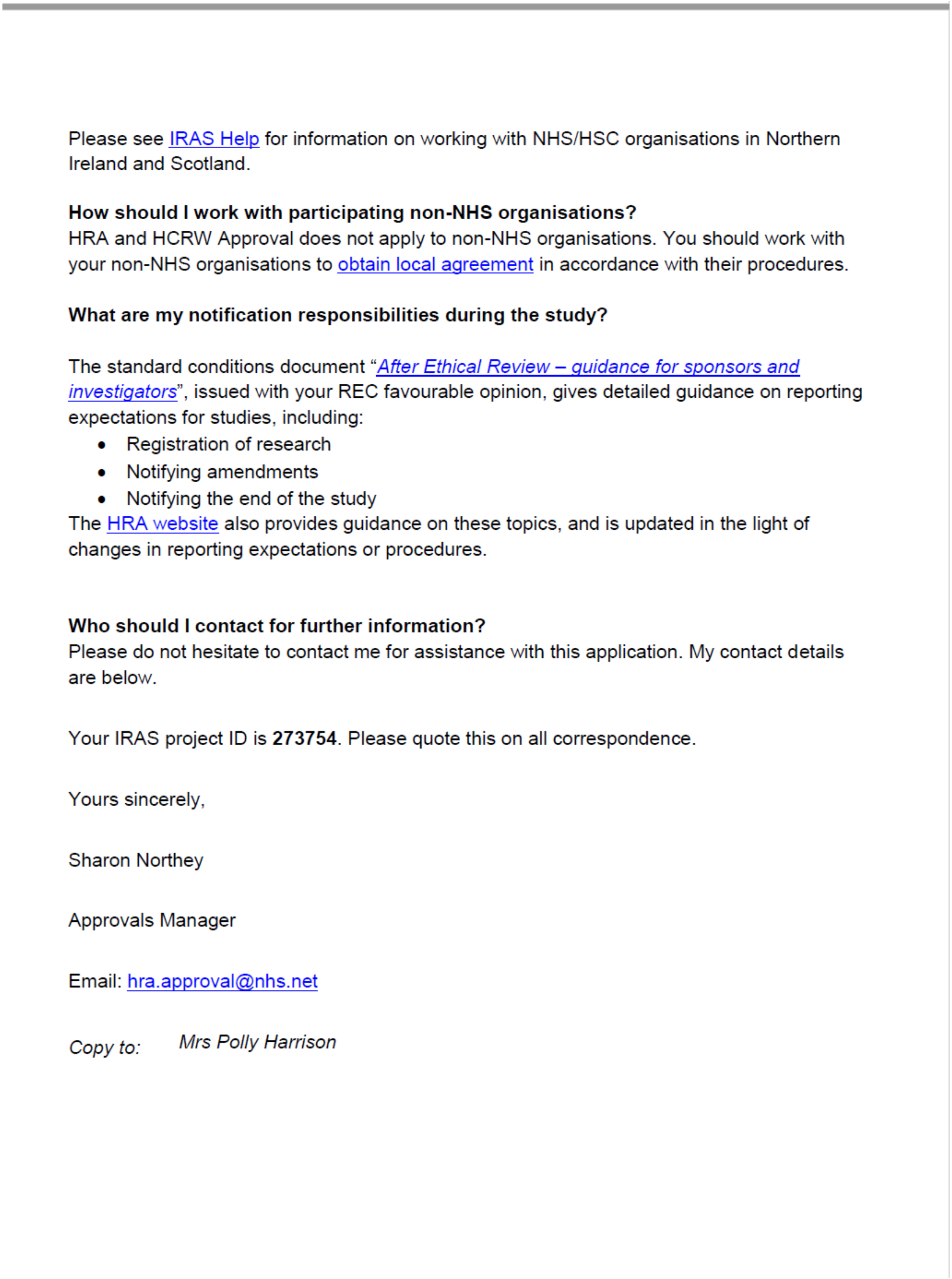
Study title:	**Clinical, socio-demographic and environmental factors in the Duration of Untreated Psychosis, among patients with First Episode of Psychosis.**
IRAS project ID:	**273754**
Protocol number:	**1**
REC reference:	**20/NI/0035**
Sponsor	**University of East Anglia**

I am pleased to confirm that **HRA and Health and Care Research Wales (HCRW) Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.

Please now work with participating NHS organisations to confirm capacity and capability, in line with the instructions provided in the "Information to support study set up" section towards the end of this letter.

How should I work with participating NHS/HSC organisations in Northern Ireland and Scotland?
HRA and HCRW Approval does not apply to NHS/HSC organisations within Northern Ireland and Scotland.

If you indicated in your IRAS form that you do have participating organisations in either of these devolved administrations, the final document set and the study wide governance report (including this letter) have been sent to the coordinating centre of each participating nation. The relevant national coordinating function/s will contact you as appropriate.



Please see IRAS Help for information on working with NHS/HSC organisations in Northern Ireland and Scotland.

How should I work with participating non-NHS organisations?
HRA and HCRW Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to obtain local agreement in accordance with their procedures.

What are my notification responsibilities during the study?

The standard conditions document "*After Ethical Review – guidance for sponsors and investigators*", issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

Who should I contact for further information?
Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **273754**. Please quote this on all correspondence.

Yours sincerely,

Sharon Northey

Approvals Manager

Email: hra.approval@nhs.net

Copy to: *Mrs Polly Harrison*

Appendix D: Cambridgeshire and Peterborough NHS Foundation Trust R&D approval

Cambridgeshire and Peterborough NHS
NHS Foundation Trust

Understanding mental health understanding people
Research and Development Department

Joint Research Office
Box 277
Addenbrooke's Hospital
Hills Road
Cambridge
CB2 0QQ

Direct Dial: 01223 256407 ext 256407
E-mail: mary-beth.sherwood@cpft.nhs.uk
www.cpft.nhs.uk

R&D ref: M00964

Mrs Karolina Kaminska
University of East Anglia/CPFT
Norwich Research Park
NR4 7TJ

05 March 2020

Dear Mrs Karolina Kaminska

IRAS ID: 273754
Clinical, socio-demographic and environmental factors in the Duration of Untreated Psychosis, among patients with First Episode of Psychosis.
REC Ref: 20/NI/0035

Thank you for sending details of the above named study.

The R&D department has received the HRA Approval letter and reviewed the study documents. The project has been allocated the internal R&D reference number of **M00964**. Please quote this in all future correspondence regarding this study.

Capacity and capability to conduct this study at Cambridgeshire & Peterborough NHS Foundation Trust is confirmed.

We would like to take this opportunity to remind you of your responsibilities under the terms of the Research Governance Framework for Researchers, Chief Investigators, Principal Investigators and Research Sponsors and to also of the requirement to notify R&D of any amendments or changes made to this study.

You will be aware that the Trust is subject to national reporting requirements for first patient recruitment within 70 days. Further details on this can be found on the NIHR website:
http://www.nihr.ac.uk/policy-and-standards/faster-easier-clinical-research.htm
If you have any questions or concerns about this, please contact me.

I wish you every success with this study.

Yours sincerely

pp

Stephen Kelleher
Senior R&D Manager

Carbon Copy: (CI) Dr Sheri Oduola, Dr Rudolf Cardinal