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Social Distance and Community Attitudes Towards People with Psycho-Social Disabilities in Uttarakhand, India

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Abstract

Stigma is an important contributor to the large treatment gap for people with mental and psycho-social disabilities (PPSD) in India. Social distance as assessed by willingness to engage in relationships with PPSD is a proxy measure of stigma and potential discrimination. In North India, investigations of community attitudes towards PPSD have been limited. To describe attitudes towards people with depression and psychosis, a community sample of 960 adults in Dehradun district, India from 30 randomised clusters, was surveyed using a validated tool to assess social distance, beliefs and attitudes related to mental illness. Participants preferred greater social distance from a person with psychosis than a person with depression. Beliefs and attitudes around mental illness were diverse reflecting a wide spread of belief frameworks. After controlling for confounding, there was increased social distance among people who believed PPSD were dangerous. Factors that reduced social distance included familiarity with PPSD, and belief that PPSD can recover. Attitudes to PPSD, stigma and social distance are complex and likely to require complex responses that include promoting awareness of mental health and illness, direct contact with PPSD and increasing access to care for PPSD.

Keywords Stigma · Mental disorders · India · Social distance · Quantitative

Introduction

Psycho-social disabilities (which include mental, neurological and substance abuse disorders) were the leading cause of years lived with disability in the 2010 Global Burden of Disease study, with the majority of people affected by this burden living in low and middle income countries (LMIC)

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(Whiteford et al. 2013). The term 'psychosocial disability' is used to refer to people who have received a diagnosis of a mental health condition and experienced related negative social effects including prejudice, discrimination and exclusion (Drew et al. 2011). The treatment gap for people with psycho-social disability (PPSD) in India is estimated to be 90% or higher (World Health Organisation 2011). While sparse mental health services contribute significantly to the treatment gap, even where there is access to care, stigma and fear of discrimination are major reasons why PPSD do not access mental health services (Corrigan 2004; Lahariya et al. 2010; Raguram et al. 2004; Shidhaye and Kermode 2013; Whiteford et al. 2013).

Stigma occurs when labelling, status loss, stereotyping, separation and discrimination occur together in situations that allow them (Link and Phelan 2001). It leads to individuals being perceived as 'tainted and discounted' (Goffman 1963). Stigma impacts PPSD by contributing to under-treatment, social isolation, and low help-seeking, and it slows recovery and re-integration (Corrigan 2004; Corrigan and Watson 2002; Shidhaye and Kermode 2013). PPSD may internalise stigmatising ideas and consequently develop a negative view of themselves. This self-stigma leads to

reduced self-efficacy and inaction for example, in job seeking. Stigma contributes to social exclusion and reduced rights for PPSD (Whiteford et al. 2013).

Stigma is complex and has many facets, which are dependent on culture and context. While it is not easy to measure, one useful proxy measure of stigma and the potential for behavioural discrimination is social distance which has been defined as the relative willingness of a person to participate in relationships of varying degrees of intimacy with a person who has a stigmatised identity (Corrigan et al. 2001; Link et al. 1987; Penn et al. 1994).

Factors influencing social distance include the nature of the psycho-social disability, labels used, respondents' familiarity with PPSD, and beliefs about mental disorders (Dietrich et al. 2004; Kermode et al. 2009; Angermeyer et al. 2003; Corrigan et al. 2001). Cross-national studies show consistent associations related to social distance, such as the fact that people familiar with a PPSD are less likely to seek social distance (Dietrich et al. 2004; Jorm and Oh 2009; Bell et al. 2010); however context is critical and there are also major cross-national differences in factors related to social distance (Jorm and Oh 2009).

The majority of studies describing attitudes towards PPSD in India have been conducted in the Southern (Thara and Srinivasan 2000; Raguram et al. 2004, 1996; Srinivasan and Thara 2001; Kulesza et al. 2014; Koschorke et al. 2014), Western (Kermode et al. 2009) and Eastern (Chowdhury et al. 2001; Jadhav et al. 2007) regions of the country. While we have conducted recent qualitative research into experiences of exclusion of PPSD in North India (Mathias et al. 2015b), we could find no quantitative research analysing factors associated with social distance and PPSD in the Hindi speaking belt of India, an area representing 600 million people. In seeking to identify effective interventions for stigma reduction, we need to better understand attitudes towards PPSD in context (Thornicroft et al. 2015).

The objectives of this research were to describe attitudes towards people with depression and psychosis, and the relationships between social distance, socio-demographic variables and beliefs about PPSD among community members in Uttarakhand state.

Methods

Setting

This study was conducted in two blocks (administrative unit with up to 200,000 inhabitants) in Dehradun district Uttarakhand as part of the baseline survey for Burans, a community mental health partnership project. Dehradun district has 1.7 million people and has health indicators that are slightly better than the all India average (Government of India 2011). The National Mental Health Plan (NMHP) had not been implemented in any district in Uttarakhand at the time of this survey during which there were two government psychiatrists and no government psychologists in Dehradun district. The setting has been described in detail in another paper by the same research team(Mathias et al. 2015a).

Sample Selection

Using a sampling frame of 235,000 (population of two blocks of Dehradun district), 30 clusters and 95% confidence intervals the required sample size was N=460. To account for the effects of clustering we allowed a design effect of 2, giving a total of 960 persons.

Cluster sampling was conducted in three phases: (1) ward or panchayat (administrative unit, approximately 5000 people) (2) household and (3) participant. We used STATA (STATA Corp LP 2013) to calculate sample size, based on estimated prevalence of depression of 10% (Mathias et al. 2015a).

Clusters were stratified based on rural: urban ratios in the State's 2011 census (Government of India 2011) to require 21 urban and 9 rural clusters. These were selected by random number generation from the public census list of panchayats and wards. At a household level every 6th house on the right was surveyed. Generally male field staff surveyed male respondents, and female staff surveyed female respondents. Inclusion criteria were that participants should be an occupant of a household, 18 years or older, and able to comprehend and respond to a survey.

Data Collection and Survey Tool

Project Burans field staff, who were either high school or tertiary graduates and residents of Dehradun district, collected data in July and August 2014. All were trained in sampling strategy, use of the survey tool, data recording and management, and ethical conduct of research, and were supervised and supported by KM.

A comprehensive survey tool was translated into Hindi, back translated to English and piloted extensively by the Programme for Improving Mental health carE (PRIME) team in Madhya Pradesh (PRIME 2013; De Silva et al. 2015). The survey was interviewer administered in Hindi. Socio-demographic information collected included caste, marital status, highest education level attained, indicators of housing quality (Anant and Das 2011), indebtedness, and employment status adapted from the Indian version of the Demographic and Health surveys (International Institute for Population Sciences 2007). At census enumeration and on birth registration Indians must identify themselves as General Caste, Other Backward Classes (OBC) or a member of a Scheduled Tribe/Caste (SC/ST) based on the identity

of their parents (Mukherjee 2013). To assess attitudes and beliefs, participants responded to questions about one of two vignettes. One vignette described a 45 year old woman, Ranibai, who has typical symptoms of depression. A second vignette describes 25 year old man, Chotelal who has classic symptoms of psychosis. The vignettes are presented in Fig. 1. Data collectors primarily used Vignette 1 with women participants and Vignette 2 with men, as unrelated men and women do not generally interact in north India. Therefore 399 women and 109 men responded to questions related to Ranibai (ie total n = 508) while 81 women and 371 men responded to questions on Chotelal (ie total n = 462). We also asked respondents whether they knew anyone with a mental illness, or anyone like the person presented in the vignette to assess familiarity with psycho-social disability.

- To assess social distance we used a five-item modification of the Social Distance Scale (Link et al. 1987; Penn et al. 1994) which has been validated internationally and in India (Angermeyer et al. 2004; Corrigan et al. 2001). Participants indicated their preference for engaging in a relationship with the person in the vignette in terms of being neighbours, working together, engaging socially, being friends and that person's marriage into the family using a five-point Likert scale.
- A five-point Likert scale was also used to assess beliefs and attitudes of participants regarding mental health generally, and the health problem described specifically, and the helpfulness of different treatments and service providers.

Analysis

Survey data were analysed using STATA version 13.1. A p value < 0.05 was considered statistically significant. The dependent composite variable of social distance, and independent variables of age and years of education were treated as continuous while remaining independent variables were treated as categorical.

Attitudes or beliefs related to PPSD were scored against a range of statements as follows: strongly agree (4), agree (3), can't say (2), disagree (1), strongly disagree (0). The composite variable for social distance assessed these responses over five questions, providing a tally with a possible range of 1–20. For the descriptive analysis, these were grouped into three responses: agree (2), can't say (1), and disagree (0). A higher score corresponded to a greater preference for social distance from the person in the vignette. The alpha-Cronbach test assessing internal consistency for this measure was 0.80. First simple linear regression modelling was undertaken to identify predictors of social distance. Predictor variables included demographic variables, previous contact with a PPSD and a range of statements assessing beliefs and attitudes to PPSD. Predictor variables that were statistically significant were then selected and included in the final multiple linear regression model.

All participants gave either written or verbal consent to participate in the study. Ethics approval was obtained from the Emmanuel Hospital Association Institutional Review Board of Ethics in New Delhi in April 2014.

Fig. 1 Vignettes depicting depression (Vignette One) and psychosis (Vignette Two) from the community survey

Vignette 1 - Rani Bai is a 45 year old woman living in a village. She has three sons and one daughter. All of them are grown up and married. She lives with her husband and works as a farm labourer. Their financial condition is poor and with great difficulty they are able to maintain their house. Since the last 2-3 months she started feeling very tired throughout the day and she gradually stopped going to the farm. She had difficulty sleeping at night and would wake up early in the morning feeling very tired. Earlier she used to eat two to three chapattis at one time, but now she doesn't feel like eating even half. She doesn't speak to anyone in the house and starts crying sometimes without any reason. She constantly complains of headaches and body-aches and feels that she is totally useless. Her husband complains that Ranibai has become very lazy and is not interested in any work. She also once told her daughter that she feels that she should end her life by jumping in the well.

Vignette 2 – Chotelal is a 25 year old man living with his wife and parents in a village. He was seemingly normal but has changed in the past 1-2 weeks and started to show bizarre behaviour. He has become extremely restless, looks frightened, and tries to do unreasonable and dangerous things – he started a fire, broke some household objects, has been undressing publicly and tearing his clothes, and even tried to harm someone for seemingly no reason. Sometimes he behaves as if he is hearing voices that no one else can hear and he says he is receiving orders from invisible powers. Due to all this, his family members are frightened and have a difficult time talking to him. His usual routine life has been badly affected and even his family members are finding it difficult to manage.

Results

The total sample size was 960 people, with 100% participation of identified participants within three visits to households. The sampled population had a mean age of 39.4 years and a median age of 37.5 years. The higher representation of women among those who had not completed primary school is also reflected in the significantly lower rates of literacy for women across Uttarakhand. The sampled survey population differs significantly from the wider Uttarakhand population (Government of India 2011) by greater representation of middle-aged people, those who identified themselves as Scheduled Caste/ Tribe and unschooled people, all of whom are more likely to be found at home during the day in this part of India (Table 1).

The findings show mixed beliefs and attitudes to PPSD (Table 2). Around 90% of respondents agreed that the person had a mental or a health problem and that they could recover, and disagreed that one should avoid people with this problem. At the same time over half of respondents (50–60%) understood the problem as a sign of personal weakness in both the depression and psychosis vignettes. While 70% of respondents believed the person with psychosis was dangerous, the wording of the vignette tends to lead respondents in this direction.

There are also mixed beliefs and attitudes regarding what might be helpful for the PPSD in the vignettes (Table 2). Around 95% of respondents for both vignettes thought that talking to a family member or friend and visiting a primary care doctor or mental health professional would be helpful. Around one-third or more of respondents also thought vitamins and tonics, consulting a traditional healer and/or a saline drip would be helpful.

Table 3 presents the questions that were used to generate the composite social distance score, which had a range of 4–19.

The statements in Table 3 show a preference for increasing social distance with greater social proximity, particularly for the person with psychosis. While 84% of respondents were prepared to be a neighbour to the person in the psychosis vignette, only 46% of respondents were prepared to work closely with that person. There is also a notable difference in the preference for social distance between the person in the psychosis and in the depression vignette, particularly with the last two statements that propose increasingly intimate relationships. We note 70% of respondents would be happy to work closely with the person with depression vs. only 46% with the person with psychosis. Table 4 provides a uni- and multi-variable analysis of socio-demographic characteristics and beliefs related to the depression vignette and their associations

Table 1 Demographic characteristics of survey participants

Variables	Female N (%)	Male N (%)	Total N (%)
Total	480 (50.0)	480 (50.0)	960 (100.0)
Age (years)			
18–29	159 (33.1)	121 (25.2)	280 (29.2)
30–39	145 (30.2)	101 (21.0)	246 (25.6)
40–49	100 (20.8)	101 (21.0)	201 (20.9)
50–59	44 (9.2)	80 (16.7)	124 (12.9)
60+	32 (6.7)	77 (16.1)	109 (11.2)
Marital status			
Married	366 (50.4)	360 (49.6)	726 (75.6)
Divorced/separated/ widowed	48 (10.0)	13 (2.7)	61 (6.4)
Single	66 (13.7)	107 (22.3)	173 (18.0)
Rural/urban			
Rural	145 (30.2)	143 (29.8)	288 (30.0)
Urban	335 (69.8)	337 (70.2)	672 (70.0)
Education			
None/incomplete primary	109 (22.7)	51 (10.6)	160 (16.7)
Primary completion	88 (18.3)	90 (18.7)	178 (18.5)
Secondary completion	199 (41.5)	273 (56.9)	472 (49.2)
Graduate	84 (17.5)	66 (13.7)	150 (15.6)
Religion			
Hindu	401 (83.5)	308 (82.9)	799 (83.2)
Muslim	71 (14.8)	70 (14.6)	141 (14.7)
Other	8 (1.7)	11 (2.5)	19 (2.1)
Caste			
Scheduled caste/tribe	122 (25.4)	116 (24.2)	238 (24.8)
Other backward caste	74 (15.4)	73 (15.2)	147 (15.3)
General	284 (59.2)	291 (60.6)	575 (59.9)
House-type			
Low-quality	89 (18.5)	71 (16.5)	168 (17.5)
High-quality	391 (81.5)	401 (83.5)	792 (82.5)

with social distance while Fig. 2 portrays visually how scores for social distance show a marked right shift, i.e. higher preference for social distance from the person with psychosis versus the person with depression.

In the uni-variable analysis of the depression vignette, socio-demographic factors that were significantly positively associated with social distance were people who are divorced or widowed, people who believe that PPSD are dangerous and that PPSD should be avoided.

Factors negatively associated with social distance for the person with depression in uni-variable analysis i.e. who showed preference for closer proximity with PPSD, were people: of oppressed castes; with lower quality housing; who know someone with a mental illness; and those who believe that mental problems are a sign of personal

Table 2 Proportion of respondents agreeing (or otherwise) with statements about person in the vignettes

	Statement	Depression vignette N (%)	Psychosis vignette N (%)
Causes	X has some mental problem		
	Strongly agree/agree	496 (97.8)	445 (98.7)
	Don't know	6 (1.1)	1 (0.2)
	Disagree/strongly disagree	5 (1.0)	5 (1.1)
	X's problem is sign of personal weakness		
	Agree	303 (59.7)	226 (50.0)
	Don't know	129 (25.4)	133 (29.4)
	Disagree	76 (15.0)	93 (20.6)
Prognosis	X can completely recover from this illness		
	Agree	464 (91.3)	403 (89.1)
	Don't know	40 (7.9)	46 (10.2)
	Disagree	4 (0.8)	3 (0.7)
Responses	People with this problem are dangerous		
	Agree	213 (41.9)	320 (70.8)
	Don't know	143 (28.2)	93 (20.6)
	Disagree	152 (29.9)	39 (8.6)
	Best to avoid people with this problem		
	Agree	86 (16.9)	55 (12.7)
	Don't know	70 (13.8)	50 (11.1)
	Disagree	352 (69.3)	347 (76.8)
Treatment and responses	Talking to a friend or family could be helpful		
	Agree	486 (95.7)	429 (94.9)
	Don't know	19 (3.7)	21 (4.7)
	Disagree	3 (0.6)	2 (0.4)
	Consulting a primary care doctor could be helpful		
	Agree	458 (90.3)	421 (93.1)
	Don't know	37 (7.3)	29 (6.4)
	Disagree	12 (2.4)	2 (0.4)
	Consulting a mental health professional could be helpful		
	Agree	420 (82.7)	421 (93.1)
	Don't know	75 (14.8)	30 (6.6)
	Disagree	13 (2.6)	1 (0.2)
	Consulting a traditional healer could be helpful		
	Agree	156 (30.7)	171 (37.8)
	Don't know	228 (44.9)	163 (36.1)
	Disagree	124(24.4)	118 (26.1)
	Taking vitamins/tonics could be helpful		
	Agree	286 (56.3)	204 (45.1)
	Don't know	159 (313.3)	164 (36.3)
	Disagree	63 (12.4)	84 (18.6)
	Taking a saline drip could be helpful		
	Agree	150 (29.5)	100 (22.1)
	Don't know	239(47.1)	233 (51.6)
	Disagree	119 (23.4)	119 (26.3)

weakness, that it is harmful to consult a traditional healer, to take vitamins and tonics and take an IV saline treatment.

In the multi-variable regression analysis, the variables that persisted in a negative association with social distance were people who believed the person can recover and return to normal life and that administration of normal saline could be helpful. People who were single or divorced and, those who considered the person dangerous

Table 3 Proportion agreeing/disagreeing to have relationships with people in the vignettes

Question—how comfortable would you be with people like X in terms of the social relationships described?	Depression N (%)	Psychosis N (%)
Be a neighbour to the person		
Strongly agree or agree	469 (92.3)	381 (84.3)
Can't say	30 (5.9)	41 (9.1)
Strongly disagree or disagree	9 (1.7)	30 (6.6)
Spend time socialising with the person		
Strongly agree or agree	424 (83.5)	290 (64.2)
Can't say	61 (12.0)	85 (18.8)
Strongly disagree or disagree	23 (4.5)	77 (17.0)
Develop a friendship with the person?		
Strongly agree or agree	377 (74.2)	256 (56.6)
Can't say	87 (17.1)	94 (20.8)
Strongly disagree or disagree	44 (8.7)	102 (22.6)
Work closely with the person?		
Strongly agree or agree	356 (70.1)	211 (46.7)
Can't say	81 (15.9)	101 (22.4)
Strongly disagree or disagree	71 (14.0)	140 (31.0)
Have the person marry into your family?		
Strongly agree or agree	160 (31.5)	57 (12.6)
Can't say	110 (21.7)	84 (18.6)
Strongly disagree or disagree	238 (46.9)	311 (68.8)

Table 4 Uni- and Multi-variable analysis of socio-demographic characteristics and beliefs related to the depression vignette and their associations with social distance

Variable	β Co-efficient (95% CI) (uni-variable)	β Co-efficient (95% CI) (multi-variable)
Sex	−0.15 (−0.82, 0.52)	
Age	0.02 (0.00, 0.04)	
Religion group (Hindu and Muslim)	0.23 (−0.46, 0.93)	
Rural versus urban	0.17 (−0.42, 0.76)	
Caste		
OBC versus general	−0.77* (−1.53, −0.01)	−0.48 (−1.17, 0.21)
SC/ST versus general	−1.21* (−1.85, −0.56)	−0.50 (−1.11, 0.10)
Marital status		
Divorced/widowed versus married	1.97* (0.98, 2.96)	1.64* (0.74, 2.54)
Single (never married) versus married	0.51* (−0.625, 0.92)	−0.14 (−0.84, 0.56)
House type—High quality versus low quality	−0.862* (−1.58, −0.15)	−0.64 (−1.29, 0.01)
Education (years of education)	−0.01 (−0.06, 0.05)	
Taken recent loan (No=0, Yes=1)	−0.47 (−1.5, 0.61)	
Know someone with mental illness (No=0, Yes=1)	−1.01* (−1.72, −0.31)	−0.58 (−1.21, 0.06)
Believe person can recover (Disagree 0, Can't say 1, Agree 2)	−1.53* (−2.39, −0.67)	−1.54* (−2.41, −0.67)
Believe this is a sign of personal weakness (Disagree 0, Can't say 1, Agree 2)	−1.07* (−1.43, −0.71)	−1.01* (−1.35, −0.68)
Consider person dangerous (Disagree 0, Can't say 1, Agree 2)	0.95* (0.63, 1.27)	0.76* (0.45, 1.06)
Best to avoid person with this problem (Disagree 0, Can't say 1, Agree 2)	0.61* (0.26, 0.97)	0.37* (0.04, 0.69)
Believe consulting traditional healer may be helpful (Disagree 0, Can't say 1, Agree 2)	−0.5* (−0.87, −0.13)	−0.24 (−0.60, 0.13)
Believe vitamin/tonics may be helpful (Disagree 0, Can't say 1, Agree 2)	−0.75* (−1.14, −0.36)	−0.06 (−0.51, 0.40)
Believe IV saline may be helpful (Disagree 0, Can't say 1, Agree 2)	−1.03* (−1.40, −0.66)	−0.69* (−1.12, −0.27)

*$p < 0.05$

Fig. 2 Attitude scores for pre-
ferred social distance for person
with depression (Vignette 1—
grey) and person with psychosis
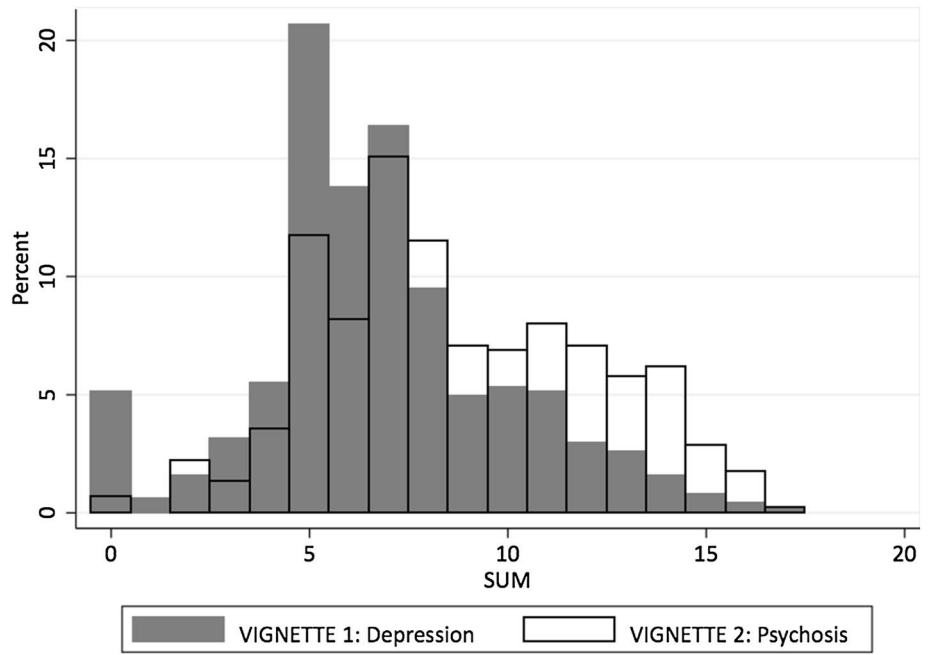(Vignette 2—clear)

Table 5 Uni- and Multi-variable analysis of socio-demographic characteristics and beliefs related to the psychosis vignette and social distance

Variable	β Co-efficient (uni-varia-ble) (95% CI)	β Co-efficient (multi-variable) (95% CI)
Sex	−0.54 (−1.37, 0.29)	
Age	0.00 (−0.27, 0.02)	
Religion group (Hindu and Muslim)	−0.42 (−1.33, 0.50)	
Rural (1) versus urban (2)	0.16 (−0.86, 0.55)	
Caste		
OBC versus general	−0.34 (−1.28, 0.59)	
SC/ST versus general	−0.60 (−1.37, 1.60)	
Marital status		
Divorced/widowed versus married	0.28 (−1.35, 1.91)	
Single (never married) versus married	0.34 (−0.43, 1.12)	
House type—High quality versus low quality	0.07 (−0.78, 0.91)	
Education (years of education)	−0.08* (−0.16, −0.01)	−0.11* (−0.18, −0.04)
Taken recent loan (No = 0, Yes = 1)	−0.99 (−2.18, 0.19)	
Know someone with mental illness	−1.00* (−1.76, −0.25)	−1.19* (−1.92, −0.47)
Believe person can recover (Disagree 0, Can't say 1, Agree 2)	−1.67* (−2.60, −0.75)	−1.13* (−2.15, −0.10)
Believe this is a sign of personal weakness (Disagree 0, Can't say 1, Agree 2)	−0.71* (−1.11, −0.32)	−0.69* (−1.07, −0.31)
Consider person dangerous (Disagree 0, Can't say 1, Agree 2)	0.68* (0.18, 1.17)	0.71* (0.24, 1.17)
Best to avoid person with this problem (Disagree 0, Can't say 1, Agree 2)	0.02 (−0.41, 0.45)	
Believe consulting traditional healer may be helpful (Disagree 0, Can't say 1, Agree 2)	0.37 (−0.77, 0.03)	
Believe Vitamin/ tonics may be helpful (Disagree 0, Can't say 1, Agree 2)	−0.62* (−1.03, −0.02)	−0.28 (−0.78, −0.22)
Believe IV saline may be helpful (Disagree 0, Can't say 1, Agree 2)	−0.93* (−1.4, −0.48)	−0.73* (−1.28, −0.19)

* $p < 0.05$

and best avoided continued to show a positive association with social distance.

Table 5 shows the coefficients of association of all factors (socio-demographic and beliefs) that were significantly correlated with social distance towards the person with psychosis after uni- and multi-variable linear regression analysis.

In the uni-variable analysis of the psychosis vignette, the only factor that is positively associated with social distance is with people who consider the person is dangerous. Factors that are significantly negatively associated with social distance from the person with psychosis were people: who knew a PPSD; with more education; who believe the problem is a sign of personal weakness and that PPSD can recover and return to normal life; and who think that administration of vitamins/tonics and IV saline may be helpful to the affected person.

In the multi-variable regression analysis all the same factors remained significant except the belief that vitamins and tonics are helpful.

Discussion

This cross-sectional population study in Dehradun district identifies important associations between attitudes towards PPSD and social distance. While the majority of respondents were comfortable with superficial relationships such as being friends or neighbours to the person with depression or psychosis, there was an increased preference for social distance from the person with psychosis in closer relationships. Nearly 90% of respondents believed that the affected person portrayed in the vignettes was likely to recover and return to normal life and this was significantly associated with reduced social distance, a positive view of the also found among pharmacy students in India (Bell et al. 2010). Increasing community knowledge and understanding of a positive prognosis for PPSD is an important intervention that can both reduce stigma (Jorm and Oh 2009; Thornicroft et al. 2015) and motivate health seeking behaviours.

Belief in the capacity of PPSD to recover has been increasingly recognised as important in the last two decades (Hopper 2007). Recovery has been defined as 'a deeply personal, unique process of changing one's attitudes, values, feelings, goals, skills and/or roles to living a satisfying, hopeful and contributing life even with the limitations caused by illness' (Anthony 1993; Hopper 2007). It is marked by four base requirements of connectedness, hope, identity and empowerment, and is built on a capabilities approach (Sen 2000; Hopper 2007). In northern India there have been very few interventions to increase community knowledge in mental health; these findings suggest there is a ripe opportunity to present nuanced messages regarding psycho-social disability that move beyond binary bio-medical

classifications of well/ unwell to allow construction of alternative and positive approaches to recovery (Kermode et al. 2007).

Not surprisingly, people who perceived the PPSD portrayed in the vignette as dangerous or best avoided, showed a significant association with greater preference for social distance. This association persisted in both the depression and psychosis vignettes after controlling for confounding and aligns with observations internationally (Corrigan et al. 2001, 2002; Angermeyer et al. 2004).

This finding underlines a clear need to increase mental health literacy, defined as knowledge and beliefs about mental disorders which aid their recognition, management or prevention (Jorm 2000) in India. Increasing mental health literacy is important to reduce negative attitudes and stigma, and has been shown to be particularly effective among young people (Jorm and Oh 2009). In a review of over 16 intervention studies designed to increase knowledge and mental health literacy, 13 studies showed they had been effective in reducing social distance. Among young people in high income countries, awareness and knowledge building interventions have been most effective to reduce stigma (Thornicroft et al. (2015); Corrigan et al. 2012). Mass media anti-stigma campaigns that increase knowledge have also been effective in achieving short-term reductions in stigma (Corrigan et al. 2012). The few studies of stigma interventions in LMICs have shown short-term improvement in attitudes but not knowledge (Thornicroft et al. 2015). A study from India that delivered a brief educational activity related to stigma and discrimination found limited impact on stigma reduction(Armstrong et al. 2011). Context specific interventions to increase knowledge and awareness of mental health need to be implemented and evaluated in India and other LMICs.

This study showed that familiarity with a PPSD was associated with reduced desire for social distance from a person with psychosis. This association has been seen internationally and in India (Corrigan et al. 2001; Angermeyer et al. 2003, 2004; Kermode et al. 2009; Lauber et al. 2003). Stigma interventions in high income countries have found that the most effective anti-stigma interventions among adults are those that seek to increase contact with PPSD (Thornicroft et al. 2015; Jorm and Oh 2009). Studies to evaluate the effectiveness of direct contact as an intervention in LMICs such as India are needed and should measure both the context and nature of contact with PPSD (Jorm and Oh 2009). While PPSD in rural India are more integrated in the community, increasing community members' direct contact with people with severe mental disorders may be difficult to facilitate in urban India where many affected family members are locked away from public view (Dietrich et al. 2004). It is also possible that direct contact with PPSD who remain unable to access effective treatment may not achieve

the reductions in stigma and discrimination as seen in HICs where people can receive effective treatment more easily.

Understanding negative attitudes and stigma and the mechanisms and axes of power that drive them in diverse contexts is complex (Rüsch et al. 2012; Thornicroft et al. 2015; Corrigan et al. 2012; Link and Phelan 2014; Jorm and Oh 2009). For example, one strategy for stigma reduction thought to be useful, is to promote the concept that mental disorders have a biological aetiology. Proponents of this strategy argue that if mental disorders are caused by factors outside the control of an individual, the public will be less negative in their attitudes (Dietrich et al. 2004). However, evidence from both India and other countries suggests that promoting Western biomedical explanatory models of mental illness may actually increase stigma in some settings (Kermode et al. 2009; Dietrich et al. 2004; Jorm and Oh 2009).

Our study found a negative association between beliefs that administration of vitamins/ tonics/ IV saline would be helpful to the person affected psychosis or depression and social distance. These are treatments that the general public in India understand as being linked to Western biomedicine, while people trained in a Western biomedical framework would believe they are unhelpful or even harmful therapies. This finding highlights the diverse and tangled paradigms of mind and mental health within India, and that while some accept biomedical treatments, understandings of underlying causes is broad and complex (Kermode et al. 2007; Wig 1999).

A further perplexing result in this study shows that belief that problems were caused by personal weakness was associated with lower social distance, which persisted after controlling for confounding factors in the depression vignette. This is contrary to studies in HIC that have found a positive association between these variables (Jorm and Oh 2009), although a similar study in rural Maharasthra found the same negative association (Kermode et al. 2009).

Also among socio-demographic variables we found a positive association between lower education and social distance in the psychosis vignette, a finding that has been reported elsewhere (Jorm and Oh 2009). It is possible that more years of education increases knowledge and reduces prejudice.

Methodological Considerations

A major strength of this study is that it uses a randomly selected, representative community sample covering rural, semi-urban and urban populations in North India, with a high response rate and no missing data. Data collection by local residents of the same gender increases trust and open communication potentially reducing bias. While some females answered questions on the male vignette and vice versa, there was no statistical difference in these social distance scores when compared with those who had answered questions about someone of the same sex. Methodological limitations include that social distance is a proxy measure i.e. is not a true measure of enacted discriminatory behaviour. The 100% participation rate may indicate respondents felt a requirement to participate as a form of social desirability bias, which may have also been amplified as the survey was performed face-to-face. The study sample overrepresents people more likely to be at home during the day (older people, people with less schooling and members of a Scheduled Caste/ Scheduled tribe) which risks systematic bias in sample selection and may reduce external validity of the findings.

Conclusions

Understanding attitudes and socio-demographic variables associated with social distance is essential to develop contextually appropriate interventions to decrease stigma, which is not only likely to improve the quality of life for PPSD, but also increase people's willingness to seek treatment. Our results have implications for anti-stigma initiatives in India. There is clearly an urgent need to increase awareness and knowledge in mental health, an initiative likely to be particularly effective among young people. A mental health literacy approach which includes nuanced and positive constructions of people with psycho-social disability, is a large opportunity in the current Indian context where there is relatively low levels of knowledge and awareness, and a high level of receptivity. Mass media approaches to reduce stigma in LMICs are largely unevaluated, but are a potentially effective intervention.

Initiatives that seek to increase contact, both directly and via audio-visual media, between community members and PPSD is another potentially effective pathway to promote positive attitudes and reduce stigma. To maximise positive outcomes from direct contact with PPSD it is important to also ensure that PPSD themselves have the best chance of recovery with access to knowledge, family support and required health services.

Compliance with Ethical Standards

Conflict of interest All authors declare that they have no conflict of interest in their participation in this study and written report.

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