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Psychotic symptoms associate inversely with social support, social autonomy and psychosocial functioning: A community-based study

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Abstract

Background: Population-based studies exploring psychotic symptoms (PS) show that their prevalence in the community is higher than previously thought. Psychosocial functioning and social support are poorer among people presenting clinical and subclinical PS.

Aims: We aimed to estimate the prevalence rate of PS in Andalusia and to explore the association between PS and psychosocial functioning, social support and social autonomy in a Southern European population.

Material and methods: This is a cross-sectional study. We undertook multi-stage sampling using different standard stratification techniques. Out of 5496 households approached, we interviewed 4507 (83.7%) randomly selected participants living in the autonomous region of Andalusia (Southern Spain). The Spanish version of the MINI International Neuropsychiatric Interview was used to elicit PS. We also gathered information on socio-demographic factors, suicidality risk, psychosocial functioning, social support and social autonomy.

Results: The overall prevalence of PS was 6.7% (95% CI: 5.99–6.45). PS were associated with lower age (OR 0.975; 95% CI (0.967–0.983); $p < .0001$), female gender (OR = 1.346; 95% CI (1.05–1.07) $p = .018$), not living in a rural area (OR = 0.677; 95% CI (0.50–0.90) $p = 0.009$), lower social support (OR = 0.898; 95% CI (0.85–0.94) $p < .0001$), lower scores on social autonomy (OR = 0.889; 95% CI (0.79–1.00) $p = .050$), having an increased suicidality risk score (OR = 1.038; 95% CI (1.005–1.07); $p = .023$) and having lower scores on psychosocial functioning (OR = 0.956; 95% CI (0.95–0.96); $p < 0.0001$).

Conclusions: Social outcomes seem to be strongly inversely associated with PS in spite of presumed higher levels of social support among Southern European cultures.

Keywords

Psychosis, epidemiology, social support, autonomy, social functioning

Introduction

Delusions and hallucinations are considered core psychotic symptoms (PS) and seem to occur among the non-clinical general population to a varying degree of intensity (Guerrero-Jiménez et al., 2018). Indeed, population-based studies have repeatedly showed that the prevalence of PS in the community is higher than previously thought (van Os et al., 2000, 2010). A recent meta-analysis suggests that PS in population-based studies are up to ten times higher than the prevalence of diagnosed psychotic disorders, with an estimated median prevalence of 7.2% (van Os & Linscott, 2012). Spanish population-based studies have also reported high prevalences of PS such as 11.18% in the ESEMeD Catalonia study (Ochoa et al., 2008) or 10.3% in the GRANADΣP study (Guerrero-Jiménez et al., 2018). However, different designs, eliciting methods, timings and populations may have contributed to conflicting prevalence rates of PS across studies, although most studies provide evidence of a consistently high occurrence of PS in the community.

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Poorer levels of social support, functioning and autonomy are associated with both clinical psychosis (Fusar-Poli et al., 2015; Oh et al., 1988; Trauelsen et al., 2016) and, to a lesser extent, community-ascertained PS (Saha et al., 2012; Temmingh et al., 2011). Cross-sectional studies have found associations between reduced social support and PS in the general population (Saha et al., 2012; Temmingh et al., 2011). An inverse association between psychosocial functioning and psychotic experiences is well established for both clinical and non-clinical populations (Ayoub et al., 2020; Petkari et al., 2011; Trotta et al., 2020). Similarly, poor social autonomy is associated with more frequent occurrence of PS in clinical and community samples (Priebe, 2007). However, in all, there is a relative shortage of studies exploring the influence of social outcomes on PS among non-clinical community-based samples. Moreover, most results do not report findings among Southern European populations which are known to have a rather different social setup than other European populations. We conducted this survey in Southern Spain (Andalusia), where the overall social environment fits with that of Spanish and Mediterranean cultures. The aims of the study are to estimate the prevalence of PS and their association between a battery of social variables (such as social support, psychosocial functionality and social autonomy) and PS using a large representative community sample of the Andalusian population.

Methods

Design and sample

The PISMA-ep is a cross-sectional study exploring mental health problems in the general population of Andalusia, the largest Spanish autonomous region. Its detailed methodology, sampling and interviewing methods have been described previously (Cervilla et al., 2016). In sum, a multistage sampling was performed using different standard stratification levels. We aimed at interviewing 4518 randomly selected participants from all eight provinces in Andalusian using a door-knocking approach. Out of the 5496 eligible participants approached, 4507 (83.7%) agreed to take part in the study, completed the interview and were finally included in the study. Homes with no response after two consecutive door-knocking trials were visited again on two more occasions at a later date and at different times of the day. After that, if there was no immediate response, the interviewer went to the next door which had not yet been called upon within a predetermined route. If necessary, the process was repeated until finally an eligible participant was found. When there was a response in a house, the first available person in the house, within the expected age and sex on the route, was offered to participate. In the event that there was a refusal to participate in the study, the substitution was made by visiting the next available house and, within it, going to a person of the same age range and sex as the person who had refused to participate previously. All the interviewers attended a one-week training course and showed sufficient knowledge in both interviewing techniques and in administering all scales and inventories in the protocol, with a special focus on PS ascertainment. Teaching techniques included lectures, role-playing among interviewers and video scoring with interviews conducted by experts with volunteers. The authors declare that all procedures contributing to this work fulfil the ethical standards of the Helsinki Declaration of 1975 and its 2008 revision. All procedures were approved by the Research Ethics Committee of the University of Granada (Approval NO. C.0003663). Additionally, written informed consent was obtained from all participants.

Measures

Socio-demographic factors. Information on socio-demographic variables such as age, sex, educational level, urban dwelling (vs. intermediate or rural) and geographical region was recorded.

Psychotic symptoms. PS were assessed using the psychosis section of the MINI International Neuropsychiatric Interview (MINI) in Spanish which is a brief structured diagnostic interview on Axis I psychiatric disorders compatible with DSM-IV and ICD-10 diagnoses (Ferrando et al., 1998; Sheehan et al., 1998). Its algorithms and question formulations are somewhat similar to those of the Composite International Diagnostic Interview. The MINI interview has been used in many different cultures (Kadri et al., 2005; Otsubo et al., 2005; Rossi et al., 2004) and has shown satisfactory psychometric properties in each language with kappa values consistent with other similar diagnostic interviews, such as the Composite International Diagnostic Interview or the Structured Clinical Interview for DSM-IV Disorders (Patient Edition), which in most cases show a high inter-rater reliability, a fair degree of sensitivity and a low rate of false positives when used, as in this study, among healthy population living in the community. The MINI is divided into modules, and each corresponds to a diagnostic category, including that of psychosis (PS). At the end of each module, a diagnosis box allows the rater to confirm whether the diagnostic criteria are met. In most diagnostic sections, one or two screening questions are used to rule out the diagnosis when they are answered negatively. However, in the particular case of the psychosis section, all participants are asked the entire section which includes five probe questions for delusions (L1 to L5) and two items exploring, respectively, auditory and visual hallucinations. All seven items on either delusions or hallucinations have a double-check second question assessing whether the participant actually believes what he

has responded yes to (e.g. *Probe*: Have you ever had the impression that someone was spying on you or trying to harm you? If answered yes, *confirmation*: Did you actually believed this?). For the purpose of this study, we considered a positive case of PS all those subjects responding positively to both questions within any of these seven psychotic items (i.e. being screened positively by the MINI for any delusion and/or hallucination).

Suicidality. We also assessed suicidality using the suicide risk module of the Spanish version of the Mini International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998). The suicidality module is composed of six questions including: ideas of self-harm, death wish, suicidal thoughts, suicidal plans and attempts all in the past month and also lifetime suicide attempts. We have calculated the prevalence rates for each of the above-mentioned items and for a global suicidality outcome, obtaining both a continuous suicidality risk score and a dichotomous 'risk' versus 'no risk' measure. Answering 'yes' to one of the six answered questions is considered as some degree of suicidal risk (Sheehan et al., 1998). This assessment procedure for suicidality has been published in more detail elsewhere (Huertas et al., 2020).

Social support. We measured social support using an inventory of relevant items grouping around three domains (relationship with family and friends, relationship with the spouse or partner, and ability to maintain relationships in general) following procedures used in previous studies (Blaxter, 1990).

Global and psychosocial functioning. Global and Psychosocial functioning was measured with the *Personal and Social Performance scale* (PSP) (Morosini et al., 2000). The *PSP* measures functioning in four areas (a) self-care; (b) usual social activities, including work and study; (c) personal and social relationships and (d) disturbing and aggressive behaviours. Taking into account the information obtained, the interviewers scored these four areas according to the established operational criteria using a 6-point severity Likert scale ranging from 1 (absent) to 6 (very serious). PSP scoring entails a three-stage process: (a) First, using the operational criteria, interviewers rate the severity of the difficulties in the four areas; (b) secondly, using a scoring algorithm these 4 scores are converted into a score with a range of 10 points, ranging from 1 to 10 (lack of autonomy for basic operation) to 91 to 100 (excellent performance in the four main areas) and (c) in third place, taking into account the functioning in a relation of nine other areas of life, a specific score of each 10-point interval is chosen as a final measure of functioning .

Social autonomy. Social autonomy was measured with the *Objective Social Outcomes Index* (SIX) (Priebe et al., 2008). The *SIX* evaluates the patient's autonomy and consists of four elements: employment (none, 0; voluntary/protected/sheltered work, 1; regular employment, 2), accommodation (homeless or 24 hour supervised, 0; sheltered or supported accommodation, 1; independent accommodation, 2), partnership/family (living alone, 0, living with a partner or family, 1) and friendship (not meeting a friend within the last week, 0; meeting at least one friend in the last week, 1). The overall score is the sum of the scores on each item, up to a maximum of 6. A higher score means better social autonomy.

Statistical analyses

Data distribution for all variables in the study was initially explored. Subsequently, the association between the study outcome (having scored positively for at any psychotic symptom) and all other variables was univariately tested using either Student's t or χ^2 as appropriate. We then performed a stratified analysis (by sex or rurality) of associations between PS and all other study variables. Then, we performed a multivariate binary logistic regression analysis using PS as dependent or outcome variable and sought for the most parsimonious model explaining PS variance. We obtained odds ratios with 95% confidence intervals and retested the final model to obtain risk ratios finding entirely parallel results. Hence, we reported odds ratios provided the cross-sectional nature of the study and the prevalence (<10%) of PS. Additionally we specifically tested for double and treble interactions by sex and/or rurality, on the one hand, and all variables independently associated with PS in the final model, on the other.

Results

Size and sample characteristics

A total sample of 4507 participants was finally included in the study. Table 1 details the sociodemographic characteristics of the sample. In summary, 2,214 men (49.1%) and 2,293 women (50.9%) participated in the study. Mean age was 42.8 years (SD = 15.22). Participants per province ranged between 1,038 from Seville (the most populated province) and 280 from Huelva (the least populated), with intermediate samples from the other six provinces (Table 1).

Response rate

A total of 37.7% (2,074) of the selected households did not respond after all the planned attempts and had to be replaced by lack of response. Another third (33%) of the originally selected households (1,818) were replaced because they did not have any person in the range of age, sex and academic level needed in the area. In total, 3,892 households (70.8%) were replaced by equivalent

Table 1. Socio-demographic sample characteristics.

	N (%)
Gender	
Women	2,293 (50.9)
Men	2,214 (49.1)
Age range, years	
18–30	1,106 (24.5)
31–45	1,522 (33.8)
46–60	1,135 (25.2)
61–75	744 (16.5)
Province	
Almería	375 (8.3)
Cádiz	665 (14.8)
Córdoba	430 (9.5)
Granada	496 (11.0)
Huelva	280 (6.2)
Jaen	361 (8.0)
Málaga	870 (19.3)
Seville	1,030 (22.9)
Civil status	
Married/stable relationship	2,747 (61.0)
Separated	1,78 (3.9)
Widow/widower	188 (4.2)
Divorced	182 (4.0)
Single	1,212 (26.9)
Employment situation	
Employed	1,942 (46.3)
Unemployed	1,222 (29.2)
Retired	504 (12.0)
Disabled	81 (1.9)
Housewife/husband	442 (10.6)
Educational level	
Illiterate	52 (1.2)
Literate but not finish	562 (12.5)
Primary education	1,751 (39.0)
Secondary	1,332 (29.7)
University	789 (17.6)
Population size, inhabitants	
Urban (<10.000)	3,593 (79.7)
Intermediate (2001-10.000)	758 (16.8)
Rural (<2001)	156 (3.5)

households. Thus, out of the 5,496 households that were finally approached to participate, 4,507 agreed to take part in the study and completed the interview. Hence, the overall response rate was 83.7% of all households actually approached. Figure 1 shows the response and replacement rates of the PISMA-ep cohort.

Prevalence of psychotic symptoms

Out of 4,507 participants, 303 were positive for the presence of any PS. Thus, the estimated 1-month prevalence for any PS in the sample was 6.7% (CI 95%=5.99–7.45). Hallucinations and delusions were analysed separately. As shown on Figure 1, 260 individuals reported to have

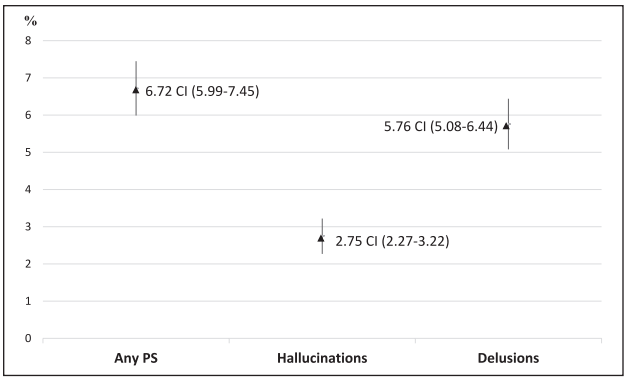

Figure 1. Prevalence (%) of PS, hallucinations and delusions in PISMA-ep sample.

delusions (5.8%; CI 95%=5.08–6.44) and 124 were screened positively for hallucinations (2.8%; CI 95%=2.27–3.22).

Univariate associations with psychotic symptoms

PS were not associated with educational level in this sample. Conversely, PS did weakly associate with female gender (X^2=4.017; p=.045) and younger age as those individuals with ages between 18 and 30 had significantly more delusions (X^2=21,866; p=.0001) and presented PS more frequently (X^2=19.846; p=.0001). In addition, the association with age followed a linear relationship in the direction that the higher the age the less frequent the presence of PS (Mantel-Haenszel X^2=17,046; p=.0001). Other socio-demographic variables associated with PS were unemployment (X^2=4,536; p=0.033); marital status (i.e. not being married or in a stable relationship) (X^2=38.642 p=.0001) and urbanicity, the latter also showed a linear association in that the higher the degree of urbanicity the higher the percentage of PS (Mantel-Haenszel X^2=6,800 p=.0001). In addition, individuals with PS had lower psychosocial functionality (t=9.248; p=.0001), lower social support (t=5.888; p=.0001) and lower social autonomy scores (t=5.007; p=.0001). Table 2 details these univariate findings. Social Autonomy was significantly lower (t=3.9; p=.0001) among women (mean SIX score=4.68 [SD=1.098]) than among men (mean SIX score=4.81 [SD=1.088]). There were no gender differences, though, for either social support or global functioning. Similarly, mean scores on social autonomy but not on global functioning or social support, were found to be significantly lower among those who lived in urban areas compared to those living in intermediate or rural areas.

Multivariate associations with psychotic symptoms

Following a multivariable analysis, the most parsimonious model explaining PS variance showed that PS independently

Table 2. Frequency (%) of psychotic symptoms (PS) according to socio-demographic profile and mean values of social functioning measures in subjects with PS *vs* subjects with no PS.

Sociodemographic profile measures	Any PS	Hallucinations	Delusions
Age			
18–30	9.3%	2.7%	8.4%
31–45	6.6%	3.2%	5.5%
45–60	5.6%	2.3%	5.0%
61–75	4.7%	2.7%	3.6%
	$p = .0001$	$p = .605$	$p = .0001$
Gender			
Male	6.0%	2.1%	5.2%
Female	7.5%	3.4%	6.3%
	$p = .045$	$p = .007$	$p = .104$
Rurality			
Urban	7.2%	2.8%	6.2%
Intermediate	5.5%	2.6%	4.9%
Rural	2.6%	1.3%	1.3%
	$p = .029$	$p = .320$	$p = .020$
Work status			
Disabled	16%	13.6%	13%
Student	11.4%	2.5%	10.4%
Retired	4%	2%	3.4%
Housewife/husband	6.3%	3.6%	5%
Employed	5.6%	2%	4.7%
Unemployed	8%	3.4%	7%
	$p = .005$	$p = .005$	$p = .005$
Civil status			
Married or with a stable relationship	4.9%	1.9%	4%
Not married, no stable relationship	9.6%	4%	8.5%
	$p = .001$	$p = .001$	$p = .001$
Educational level			
Primary/incomplete	6.3%	3.5%	5.2%
Secondary studies	7.2%	2.3%	6.4%
	$p = .427$	$p = .263$	$p = .231$
Social functioning measures	**Mean**	***p***	**CI 95%**
Global and psychological functioning			
PS	85.46	.0001	8.252–12.712
NO PS	95.94		
Social support			
PS	19.44	.0001	0.614–1.232
No PS	20.37		
Social autonomy			
PS	4.44	.0001	0.196–0.449
No PS	4.77		

associated with lower age (OR = 0.97; 95% CI = 0.96–0.98; $p < .0001$), female gender (OR = 1.35; 95% CI = 1.05–1.70; $p = .018$), not living in a rural area (OR = .677; 95% CI = 0.50–0.90; $p = .009$), lower social support (OR = .89; 95% CI = 0.85–0.94; $p < .0001$), lower scores on social autonomy (OR = 0.89; 95% CI = 0.79–1.00; $p = 0.050$), having increasing suicidality risk scores (OR = 1.038; 95% CI = 1.005–1.07; $p = .023$) and having lower levels of functionality (OR = 0.956; 95% CI = 0.95–0.96; $p < 0.0001$). We found no interactions by sex and/or rurality on the associations between PS and the rest of the independently associated variables in this multivariate model. Figure 2 summarizes the model.

Discussion

We aimed to estimate both the prevalence of PS in Andalusia and its social correlates using a representative sample participating in the PISMA-EP Study (Cervilla

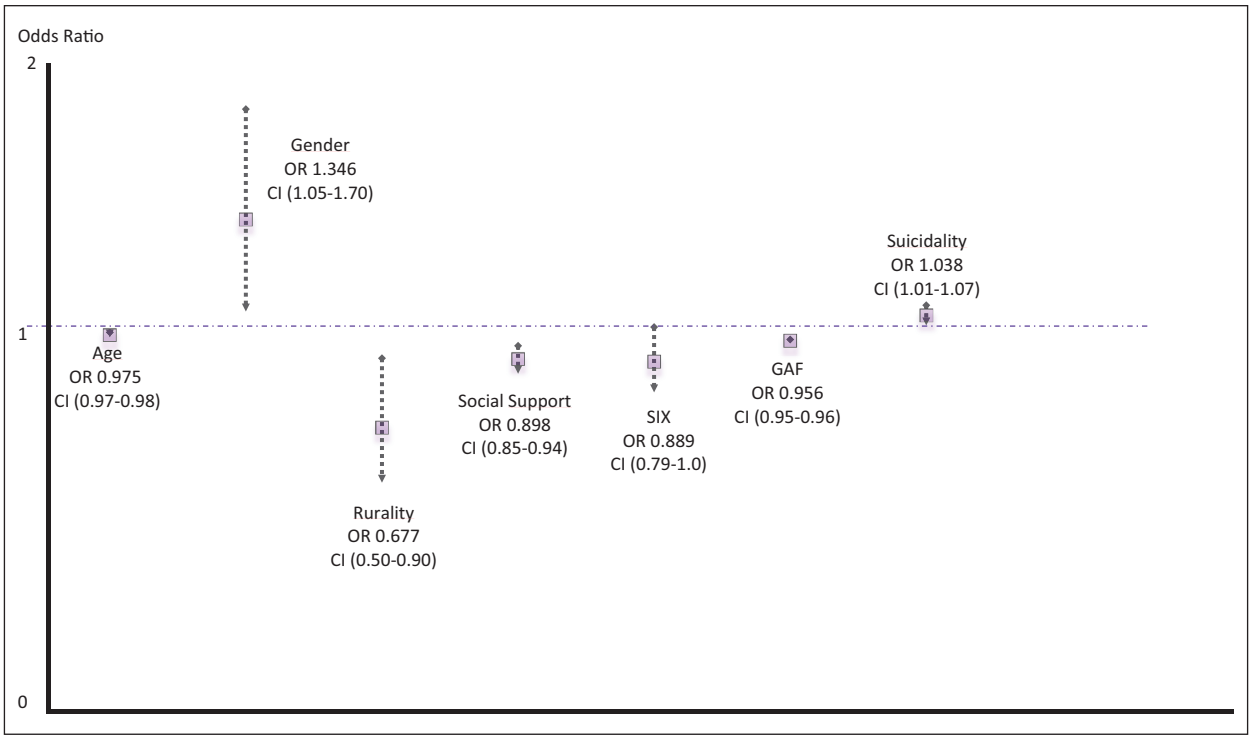

Figure 2. Multivariable correlation model for psychotic symptoms.

et al., 2016). In the event, we found that 6.7% of the sample had at least one PS whilst 5.8% admitted to have experienced at least a delusion and 2.8% had had at least one hallucination. Additionally, we found independent associations between PS and lower age, female gender, urban dwelling, lower social support, poorer social autonomy, lower general psychosocial functionality and higher self-reported suicidality.

Prevalence of psychotic symptoms

Results on prevalence are consistent with most previous similar studies and supportive of the notion of a subclinical psychotic phenotype among the general population. Thus, our findings are quite similar to those obtained in previous studies (van Os & Linscott, 2012) but lower than previous findings in Spain (Guerrero-Jiménez et al., 2018; Ochoa et al., 2008). Discrepancy could be due to different samples and timings and/or different assessment tools used to elicit PS. Indeed, our previous report with a higher prevalence (Guerrero-Jiménez et al., 2018) was obtained during a smaller study designed to pilot the current one and after which we strengthened the interviewers specific training on PS ascertainment. Nonetheless, our results are also similar to those obtained in most other European studies and quite close to the prevalence of 7.2% reported in a previous meta-analysis (Linscott & van Os, 2013). A higher prevalence of delusions than hallucinations has also been described by most previous reports (Guerrero-Jiménez et al., 2018; Linscott & van Os, 2013). Overall, our findings add new evidence from Southern Europe providing further support to the hypothesis of a broad 'psychotic phenotype' that would express dimensionally in the general, non-clinical population. This phenotype seems to be present among many people who manifest it sub-clinically compared to a lower number of more severe cases who are frequently diagnosed as suffering from clinical psychosis (van Os et al., 2010).

Age and gender

Lower age (18–30) was associated with more PS. In our previous study PS were not associated with either gender or age although, given their small effect, that could have been due to the considerably smaller sample in the previous study (Guerrero-Jiménez et al., 2018). Nevertheless, data from the World Mental Health Surveys (WMHS) (McGrath et al., 2015), a coordinated set of community epidemiological surveys of the prevalence and correlates of mental disorders including the ESEMED study (Ochoa et al., 2008) did also find a significant association between age and delusional but not hallucinatory experiences (McGrath et al., 2015). We also found a higher prevalence of PS in women, supporting previous reports from the WMHS studies (McGrath et al., 2015) where women, as in our study, had a significantly higher prevalence of hallucinations but not delusions. It is possible that part of the risk excess for PS among women is mediated by their significantly lower

levels of social autonomy, although when we specifically tested for a potential interaction the results were not statistically significant. We hypothesize that these differences could be due to the plausible occurrence of milder non-clinical forms of psychotic experience among women, that tend to emerge at a later age, as opposed to more serious and earlier-rising PS among men.

Rurality

Rurality is a well-known potentially protective factor against psychosis (Padhy et al., 2014) and our results replicate previous findings (McGrath et al., 2015) and are novel for a Southern European population sample. Recent reviews on the effect of urbanicity in psychosis associate city living with an increased risk for psychosis (Fett et al., 2019). Urban (social/economic) stress due to increased socio-environmental adversities and exposure to environmental toxins, pollution or disease agents have been proposed as underlying reasons for this association. In contrast, exposure to green space during childhood seem to reduce psychosis risk, independently of urbanicity effects (Fett et al., 2019).

Social support

Individuals with PS have lower social support which seems to be a predisposing factor for PS as reported for clinical psychosis (Palumbo et al., 2015). Such finding would appear to be of particular importance when it comes to the Spanish population, where perceived social support is at the top of the European Union (62.6%) in contrast with a European average of 34.6%, according to a recent EUROSTAT survey (Eurostat, 2019). Our finding is consistent with a previous systematic review suggesting that social networks (particularly having close friends) and support is decreased among both first psychotic episodes and non-clinical samples reporting psychotic experiences or exhibiting schizotypal traits (Gayer-Anderson & Morgan, 2013). Further, a substantial number of individuals who later develop a psychotic disorder display a steep decline in social functioning (Velthorst et al., 2017). Moreover, it seems that a higher social support would be an important element to lower the risk of PS and to decrease symptom severity or to improve outcomes and recovery among persons with clinical psychosis (Norman et al., 2005). It has been argued that it could be precisely the anxiety derived from feeling alone that would make people more susceptible to presenting PS (Sündermann et al., 2014).

Psychosocial functionality and social autonomy

We replicate previous findings of lower levels of both social autonomy and global psychosocial functioning (Foutz & Mezuk, 2015; Guerrero-Jiménez et al., 2018; Temmingh et al., 2011). One hypothesis among many that could explain these results is Self-Determination Theory (SDT) that relates psychological well-being of the individual to satisfaction of three basic psychological needs: autonomy (i.e. perceiving oneself as the volitional source of one's actions), competence (i.e. perceived effectiveness in interactions with the social environment) and relationship (i.e. a sense of connection and belonging to other individuals and to one's community). All three promote motivation, well-being and growth of individuals in all areas of functioning (Ryan, 1995). Conversely, among individuals with PS, there would be a psychosocial malfunctioning that would promote dysfunctionality even in preclinical stages potentially related to inadequate satisfaction of such needs as tend to occur among individuals with clinical psychosis (Breitborde et al., 2012; Ibanez-Casas & Cervilla, 2012). Similarly, PS can be seriously disturbing as they are related to both cognitive bias and cognition deficits (Ibanez-Casas & Cervilla, 2012). This may, in turn, render the sufferer with limited capacity to perform adequately on activities of daily living, thence decreasing their autonomy and functionality. Alternatively, given the cross-sectional nature of our study, we cannot tule out that PS are a precipitant of poorer functionality and social autonomy causing the sufferer maladaptation to his/her environment. Thus, even subclinical PS would be potential targets for preventative measures such as social policies aimed to enhance social support in the natural environment, such as support groups and network-centred initiatives (Cohen et al., 2000). Primary Care and Social Services could be established as identifiers of isolated individuals. Preventive strategies should also target especially people in younger age groups and include a gender perspective to promote the integration of women in particular.

Suicidality

Our finding that PS is associated with an increased score on suicidality risk is congruent with our previous report in the smaller GRANADΣP study (Guerrero-Jiménez et al., 2018). It also supports the notion of higher suicidality among people with PS, which has also been previously and repeatedly reported (DeVylder et al., 2015; Jenkins et al., 2010; Koyanagi et al., 2015). There are several theoretical accounts of the potential psychological mechanisms behind the association between suicidality and psychosis (Johnson et al., 2008). A similar association with PS among the general population has been linked to maladaptive interpersonal beliefs as a central element of risk (e.g. interpersonal-psychological theory of suicidal behaviour (Joiner et al., 2009; Van Orden et al., 2010). Some of such beliefs could include perceptions of rejection and ostracism from others, social defeat, the experience of being a burden and negative appraisals of belonging or availability

of supporters from distress (Johnson et al., 2008; Van Orden et al., 2010). Suicidality is, indeed, associated with many other psychopathological and psychosocial factors that may share common interplaying mechanisms with PS (Huertas et al., 2020) but subjects with PS seem to be a particular risk group who should be explored upon.

Limitations and strengths

All the limitations and biases usually attributed to cross-sectional studies also apply to this survey given its design. Hence, inferential interpretations of our findings should be constrained to this particular sample and time of assessment. Although the final response rate is fairly acceptable, about 37% of the originally established eligible households did not respond and had to be substituted for similar ones what can plausibly affect the generalisability of our findings. In addition, the MINI is a screening tool which may have a tendency to overestimate the frequencies of symptoms and disorders, which may have also influenced the results. However, we report evidence from an unexplored Southern European society that mostly replicates previous theories and findings of other studies using a non-clinical continuous measure of PS.

Conclusion

We provided a novel description of PS epidemiology in the Andalusian population. In addition, we demonstrate that non-clinical occurrence of PS may convey higher levels of disability as indicated by poorer psychosocial functioning. Our findings also suggest a potential relevance of the concept of a continuous psychotic phenotype, that may not always need clinical attention but might benefit from early identification and monitoring, as an at-risk population, with a view to prevention of increased suicidality and social exclusion.

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