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Elevated mortality risks associated with late diagnosis of cancer in individuals with psychiatric disorders?

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A B S T R A C T

Introduction: Considering the elevated cancer mortality in individuals with psychiatric conditions, possibly associated with late diagnosis, this study investigated cancer screening participation rates among patients under the care of four Trieste community mental health centers (CMHCs).
Methods: We conducted a retrospective cohort study on 1252 individuals with psychiatric disorders, retrieving their electronic health records up to December 2019. The study assessed participation rates in breast, cervical, and colorectal cancer screening programs. We explored differences in demographic and clinical characteristics of participants versus non-participants in screening programs.
Results: Patients with psychiatric conditions had lower screening participation rates compared to the general population of Trieste. The rates for breast and cervical cancers were approximately one-third lower, whereas the rate for colorectal cancer was halved. Psychiatric diagnosis influenced participation in breast cancer screening, with patients having anxiety disorders more likely to participate than those suffering from schizophrenia or disorders of adult personality and behavior. Age, nationality, marital status, employment status, and living situation all affected adherence to cervical cancer screening. Individuals who participated more frequently were in the 35–54 age range, of Italian nationality, employed, and had a family of their own. Conversely, non-participants were more likely to be widowed or unmarried. Finally, among patients eligible for colorectal cancer screening, those who participated were more likely to have a family of their own and have a diagnosis of affective or anxiety disorders, while those who did not adhere to the programs were more commonly widowed and had a higher frequency of diagnosis of schizophrenia or disorders of adult personality and behavior.
Conclusions: Mental health services should focus on increasing patients' participation in cancer screening programs in order to improve their physical health and reduce mortality. This intervention could contribute to promoting equitable access to preventative care and to bridging the gap between mental health and general medical services.

1. Introduction

Individuals with psychiatric disorders die 10–20 years earlier than the general population (Liu et al., 2017; Fernández de la Cruz et al., 2024), both for natural (e.g., medical conditions) and non-natural (e.g., suicide, accidental traumas) causes (Starace et al., 2018; Albert et al., 2019; Benatti et al., 2021). Up to 60% of this excess mortality is due to natural causes/medical conditions (Doherty, Gaughran, 2014; Walker et al., 2015), with cardiovascular disorders, metabolic syndrome, and diabetes being the major causes of death (Nordentoft et al., 2013; Vancampfort et al., 2016; Correll et al., 2017; Kim et al., 2022; Chin et al., 2023). Individuals with psychiatric conditions, whose mortality rate doubles compared to the general population (Nordentoft et al., 2013; Launders et al., 2022), might experience a reduced life expectancy due to cancer (Ni et al., 2019; Plana-Ripoll et al., 2019). The greater mortality rate in this group is in relation to higher exposure to major risk factors, including smoking, drug and alcohol use, and obesity (Gilham et al., 2023; Carrà et al., 2014); issues such as delayed diagnosis and difficulties accessing appropriate services and treatment (Baillargeon et al., 2011; Chang et al., 2014); and a lack of preventive health behaviors, such as participation in cancer screening (Solmi et al., 2020; Kim et al., 2022). Based on a systematic review and meta-analysis of

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nearly 5 million people, Solmi et al. (2020) found that individuals with mental health disorders are about 25% less likely to participate in cancer screening programs than the general population (Odds Ratio (OR): 0.76; 95% CI: 0.72–0.79), and the differences were significant depending on where the people lived. Among the 47 studies included in this meta-analysis, one was conducted in Europe (no specification of countries), three in the United Kingdom, two in Denmark, and one in Sweden, but there was no study exclusively based in Italy (Solmi et al., 2020). After the meta-analysis by Solmi et al. (2020), another study (Kisely et al., 2023) corroborated these findings and pointed out the disparities among people with psychiatric disorders in participating in cancer screening. Italy currently conducts public oncological screening for breast, cervical and colorectal cancer. Breast cancer screening employs mammography, which until 2019 was scheduled every 2 years for women aged 50–69. However, as of 2020, the Friuli Venezia Giulia (FVG) region has expanded the screening program to include women aged 45–69, joining six other regions in this increase. Cervical cancer screening involves the Papanicolaou test (Pap test) for women aged 25–30 years (performed every three years) and the HPV (Human Papilloma Virus)-DNA test for women aged 30–65 years (performed every five years). Every two years, both men and women aged 50–69 undergo the fecal occult blood test (FOBT) for colorectal cancer screening (Ministero della Salute, 2021; Valent et al., 2020). Participation in cancer screening programs varies across Italy, with differences between northern-central and southern regions (Valent et al., 2020; AIOM, 2020). In FVG, a region in the northeast of Italy with 1,200,000 inhabitants, these programs involve the invitation of the entire target population through postal letters sent by Health Local Authority (HLA). The Health Local Authority (HLA) mails invitation letters to more than 300,000 women for cervical cancer screening, more than 150,000 women for breast cancer screening, and more than 300,000 men and women for colorectal cancer screening (Franzo et al., 2017); estimates indicate that this invitation reaches approximately 95% of the target population. The FVG region has a satisfactory participation rate of 70% in public oncological screening programs, which is among the highest at a national level (Valent et al., 2020; AIOM, 2020). We aimed to investigate the participation rates in cancer screening programs among patients with psychiatric conditions. Italy, and particularly Trieste, are known to pay particular attention to the holistic care and social inclusion of patients with psychiatric disorders, as they are characterized by a well-spread community mental health system, with the presence of several services and support networks organized on a territorial basis. The Mental Health Department (MHD) of Trieste coordinates the community mental health centers (CMHCs), the general hospital psychiatric unit (GHPU), and the supported housing facilities and daily centers. Each of the four community mental health centers covers an area of 50,000 to 65,000 inhabitants, operates 24/7 with four to eight inpatient beds each, and offers a comprehensive range of psychiatric services, including prevention, treatment, rehabilitation of psychiatric disorders, and social and work support (Fontecedro et al., 2020). To our knowledge, this is the first study examining participation in cancer screening programs among subjects with psychiatric conditions to be exclusively and specifically conducted in Italy. Firstly, we derived participation rates in the public screening programs investigated (breast, cervical, and colon-rectal cancer screenings). Secondly, we assessed potential factors that could influence participation rates, including sociodemographic and clinical variables. Public health policymakers and stakeholders could use our findings to adopt preventative strategies and create facilitated pathways for individuals with psychiatric conditions, thereby improving their physical health and reducing mortality rates.

2. Methods

The study had a retrospective cohort design. We retrieved records of individuals with psychiatric disorders under the care of four community mental health centers in Trieste until December 31st, 2019. Inclusion criteria comprised an age between 27 and 69 years as of December 31st, 2019, being resident in the Local Health Authority (LHA) of Azienda Sanitaria Universitaria Giuliano Isontina - ASUGI, and having an ICD-10 (International Classification of Disease - Tenth Revision) diagnosis of schizophrenia, schizotypal and delusional disorder (F20-29), mood disorders (F30-39), neurotic, stress-related, and somatoform disorders (F40-48) (which we will refer to as anxiety disorders) or disorders of adult personality and behavior (F60-69). Exclusion criteria were: not expressing consent to the research; having a previous disease or risk factors that would require particular screening timing (e.g., a history of cervical, breast, or colorectal cancer; total hysterectomy; known breast cancer risk; breast lumps; ulcerative colitis and polyposis); pregnancy or lactation; intellectual disability or dementia. We obtained the sociodemographic and clinical variables through electronic records from the "pSM" database and the Mental Health Department's electronic records system. The independent variables investigated were gender, age, nationality, education level, marital status, living condition, employment status, type of contact with psychiatric services (single contact, brief treatment with less than 5 visits, or prolonged treatment with 5 or more visits), primary psychiatric diagnosis, and psychiatric comorbidities. The dependent variables were cervical, breast, or colorectal cancer screening participation rates, in accordance with public prevention programs of the FVG region. Each patient had the same time frame for taking part in the screenings: two years for the Fecal Occult Blood Test (FOBT) (colorectal cancer screening) and mammography (breast cancer screening), three years for the Pap test (cervical cancer screening in women aged 25–30), and five years for the HPV-DNA test (cervical cancer screening in women aged 30–65). We found the information about the screenings in the Electronic Health Record (EHR), which is a systematic collection of health information in a digital format, detectable via the informatic system Insiel. This system reports the results of clinical, laboratory, and instrumental tests, including the FOBT, Pap test, HPV-DNA test, and mammography. The EHR is active only for patients who have expressed their general privacy consent within the LHA. We analyzed data using chi-squared test, setting significance at a p-value lower than 0.05. We ran univariate regressions to identify potential candidate factors for the multivariate regression models. To obtain a summary model, we conducted exploratory multivariate forward stepwise logistic regressions. We used independent variables with a p-value lower than 0.05 from the univariate analyses in the forward stepwise selection procedure. This procedure stopped when adding any additional variable did not further improve the model's fitness. We thus identified a subset of significant factors that could affect screening participation rates. We performed data analysis using SPSS 18.0 for Windows. The local ethical committee of the Local Health Authority (Prot. 079_2020H, September 29, 2020, Comitato Etico Unico Regionale FVG) approved this study.

3. Results

We assessed the records of 1252 participants, identifying N = 518 individuals eligible for breast cancer screening, N = 741 for cervical cancer screening, and N = 872 for colorectal cancer screening (it is possible for a patient to be eligible for more than one type of screening program). Among these groups, 241 (46.5%) underwent breast cancer screening, 306 (41.3%) underwent cervical screening, and 302 (34.6%) underwent colorectal cancer screening. Table 1 summarizes the characteristics of the study subjects, and Fig. 1 shows the numerical differences in terms of participation rates between our cohort and the general population of Trieste. Patients' mean age was 54.2 years (SD: 18.2), and most participants were female (69.9%). 36.0% of the sample had a diagnosis of schizophrenia, 26.7% of affective disorders, 27.2% of anxiety disorders, and 10.1% of adult personality or behavior disorders. Table 2 describes and compares the sociodemographic and clinical variables in participants and non-participants in the three screening programs. With regards to the breast cancer screening, patients that took

Table 1
Sociodemographic and clinical characteristics of the total sample (N = 1252).

Variable			Variable		
Gender	**N**	**%**	**Professional condition**	**N**	**%**
Male	377	30.1	Unemployed	325	26.0
Female	875	69.9	Employed	723	57.7
Age mean (SD)	54.2 (18.2)		Retired/disabled	204	16.3
Nationality	**N**	**%**	**Living condition**	**N**	**%**
Italian	1140	91.1	Alone	457	36.5
Foreign	112	8.9	Family of origin	194	15.5
Marital status	**N**	**%**	Family	489	39.1
Unmarried	582	46.5	Other	112	8.9
Married/ cohabiting	374	29.9	**Psychiatric diagnosis ICD-10**	**N**	**%**
Divorced	248	19.8	Schizophrenia (F20-29)	451	36.0
Widowed	48	3.8	Affective disorders (F30-39)	334	26.7
Education	**N**	**%**	Anxiety disorders (F40-48)	340	27.2
Elementary school	46	3.7	Disorders of adult personality and behavior (F60-69)	127	10.1
Middle school license	642	51.3	**Psychiatric comorbidity (more than one psychiatric diagnosis)**	**N**	**%**
High school diploma	454	36.3	Yes	92	7.4
College degree	110	8.8	No	1160	92.6

part had only one variable that was statistically significantly different from non-participants, and this was the specific psychiatric diagnosis (p = 0.009). Intriguingly, patients with anxiety disorders exhibited a higher participation rate (56.3%) compared to patients with schizophrenia and disorders of adult personality and behavior (40.8% and 31.7%, respectively) (Fig. 2). We found statistically significant differences in five variables among subjects who participated in cervical cancer screening compared to those who did not: age range (p = 0.002), nationality (p = 0.021), marital status (p = 0.026), professional status (p = 0.001), and living condition (p = 0.000). Screening participants were predominantly in the 35–54 year age range, of Italian nationality, employed, and had a family of their own; individuals in the non-participant group were more likely to be widowed or unmarried. Finally, among patients eligible for colorectal cancer screening, those who participated were more likely to have a family of their own and a diagnosis of affective or anxiety disorders, whereas being widowed was more common in those who did not adhere to the programs. We used exploratory logistic regressions to pinpoint potential factors linked to either lower or higher participation rates (refer to table 3 in the supplementary material), potentially guiding future research. Education level was a factor that significantly predicted participation in breast cancer screening: patients with a college degree had a greater likelihood of taking part (OR: 3.20; 95% CI: 1.02–9.49) compared to those with only elementary school education. Moreover, age range was a significant predictor for participation in both cervical and colorectal cancer screenings; participation in the Pap test/HPV-DNA test was more common among the younger age groups, with the highest rates observed in the 35–44 age range (OR: 2.17; 95% CI: 1.31–3.59) compared to the 55–64 age group. A lower participation in colorectal cancer screening was present in the 56–60 years age group (OR: 0.57; 95% CI: 0.36–0.92) compared to those aged 66–69 years. Foreigners had a lower participation rate in cervical cancer screening (OR: 0.57; 95% CI: 0.37–0.87) than Italian citizens, while unemployed subjects showed lower adherence (OR: 0.68; 95% CI: 0.48–0.96) than those who were employed. Additionally, having a family was associated with a higher participation rate (OR: 1.63; 95% CI: 1.03–2.56) compared to living alone.

4. Discussion

This study, analyzing electronic records of 1252 patients with psychiatric disorders treated by community mental health centers of Trieste, found that participation rates in cancer screening programs were numerically lower in this cohort compared to the general population. In fact, cancer screening participation rates showed a reduction of about one-third compared to the general public. Our study, the first of its kind in Italy, confirms the findings of previous investigations, including the meta-analysis by Solmi and colleagues (Solmi et al., 2020). Solmi et al. (2020) reported that the average participation rate in cancer screening tests for any psychiatric disorder in Europe was 56.9% for breast cancer, 81.4% for cervical cancer, and 27.0% for colorectal cancer. These pooled rates are higher than the ones we recorded in Trieste for breast and, in particular for cervical cancer screening. This finding is possibly in relation to the fact that the studies included in Solmi's meta-analysis were conducted mainly in northern European countries, where the participation rates in cancer screening programs are higher than in the rest of Europe (Cancer Screening in the European Union, 2017). Adherence was higher in our population sample compared to other countries, such as Canada for breast cancer screening, Asia for both breast and cervical cancer screenings, and the rest of Europe and Asia for colorectal screening. Considering these results, it's important to remember that the majority of the previously mentioned studies took place primarily in hospital-based psychiatric care settings, potentially simplifying the process of following screening programs. Conversely, a

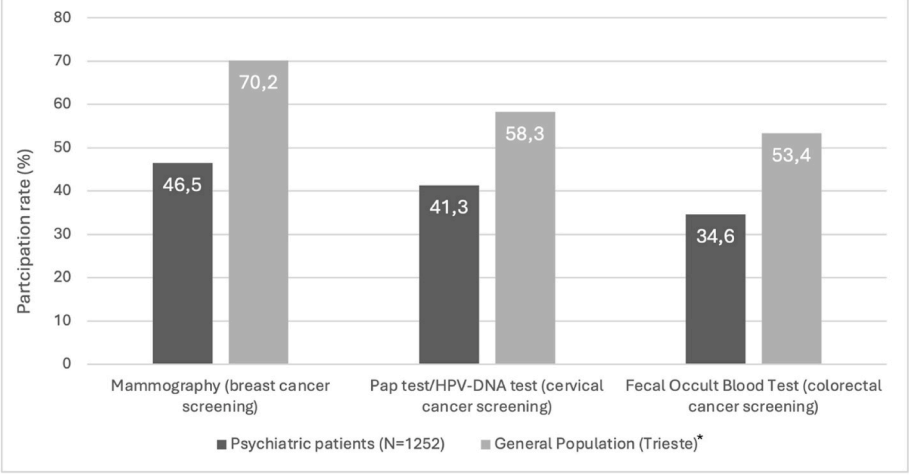

Fig. 1. Participation rates in cancer screening programs in patients with psychiatric disorders (N = 1252) compared to the general population of Trieste.
*: The data for the general population (Trieste) was retrieved from the source: ARCS Data (Azienda regionale di Coordinamento per la Salute), 2019 – this histogram plot depicts the numerical differences between a cohort of psychiatric patients (N = 1252) and the general population of Trieste for the three screening types.

Table 2
Comparison of sociodemographic and clinical correlates between participants and non-participants to three types of screening.

Variable	Mammography (breast cancer screening) N = 518						Pap test/HPV-DNA test (cervical cancer screening) N = 741						FOBT (colorectal cancer screening) N = 872					
	Participants (N = 241)		Non Participants (N = 277)		χ^2	p	Participants (N = 306)		Non Participants (N = 435)		χ^2	p	Participants (N = 302)		Non Participants (N = 570)		χ^2	p
	N	%	N	%			N	%	N	%			N	%	N	%		
Gender																	0.89	0.345
Male	/	/	/	/			/	/	/	/			124	41.1	253	55.6		
Female	241	100	277	100			306	100	435	100			178	58.9	317	44.4		
Age range					3.50	0.321					15.26	**0.002**					4.76	0.190
51–55 (Pap/HPV: 27–34)	67	27.8	82	29.6			33	10.8	43	9.9			97	32.1	176	30.9		
56–60 (Pap/HPV: 35–44)	79	32.8	88	31.8			51	16.7	55	12.6			89	29.5	202	35.4		
61–65 (Pap/HPV: 45–54)	54	22.4	74	26.7			129	42.2	144	33.1			79	23.2	128	22.5		
66–69 (Pap/HPV: 55–64)	41	17.0	33	11.9			93	30.4	193	44.3			46	15.2	64	11.2		
Nationality					1.67	0.204					5.36	**0.021**					0.33	0.567
Italian	230	95.4	257	92.8			266	86.9	85	19.5			285	94.4	543	4.7		
Foreign	11	4.6	20	7.2			40	13.1	350	80.5			17	5.6	27	95.3		
Marital status					6.31	0.097					9.26	**0.026**					12.79	**0.005**
Unmarried	67	27.8	95	34.3			114	37.3	202	46.4			116	38.4	268	47.0		
Married/ cohabiting	91	37.8	84	30.3			113	36.9	131	30.1			105	34.8	150	26.3		
Divorced	69	28.6	72	26.0			70	22.9	81	18.6			73	24.2	120	21.1		
Widowed	14	5.8	26	9.4			9	2.9	21	4.8			8	2.6	32	5.6		
Education					5.45	0.141					5.29	0.152					1.88	0.598
Elementary school	7	2.9	17	6.1			12	3.9	11	2.5			9	3.0	27	4.7		
Middle school license	128	53.1	139	50.2			134	43.8	226	51.9			158	52.3	304	53.3		
High school diploma	85	35.3	106	38.3			124	40.5	153	35.2			113	37.4	199	34.9		
College degree	21	8.7	15	5.4			36	11.8	45	10.3			22	7.3	40	7.1		
Professional condition					2.93	0.231					14.75	**0.001**					3.83	0.147
Unemployed	64	26.6	79	28.5			86	28.1	153	35.2			64	21.2	146	25.6		
Employed	99	41.1	94	33.9			179	58.5	192	44.1			189	62.6	318	55.8		
Retired/disabled	78	32.4	104	37.5			41	13.4	90	20.7			49	16.2	106	18.6		
Living condition					3.50	0.321					22.26	**0.000**					10.99	**0.012**
Alone	86	35.7	101	36.5			82	26.8	154	35.4			107	35.4	246	43.2		
Family of origin	20	8.30	28	10.1			44	14.4	65	14.9			38	12.6	77	13.5		
Family	117	48.6	117	42.1			171	55.9	178	40.9			130	43.1	182	31.9		
Other	18	7.4	31	12.2			9	2.9	38	8.7			27	8.9	65	11.4		
Psychiatric diagnosis ICD-10					11.51	**0.009**					6.83	0.077					11.96	**0.008**
Schizophrenia (F20-29)	71	29.5	103	37.2			85	27.8	146	33.6			103	34.1	228	40.0		
Affective disorders (F30-39)	77	31.9	84	30.3			96	31.4	112	25.8			92	30.5	143	25.1		
Anxiety disorders (F40-48)	80	33.2	62	22.4			101	33.0	128	29.4			90	29.8	138	24.2		
Disorders of adult personality and behaviour (F60-69)	13	5.4	28	10.1			24	7.8	49	11.3			17	5.6	61	10.7		
Psychiatric comorbidity(more than one psychiatric diagnosis)					3.73	0.054					0.41	0.520					0.25	0.615
Yes	10	4.2	23	8.3			272	88.9	393	90.3			17	5.6	37	6.5		
No	231	95.8	254	91.7			34	11.1	42	9.7			285	94.4	533	93.5		
Duration of care plan					0.80	0.669					0.99	0.609					0.13	0.936
Prolonged treatment (≥5 contact year)	189	78,4	208	75.1			234	76.5	343	78.9			227	75.2	431	75.6		
Brief treatment (<5 contact year)	42	17.4	56	20.2			55	17.8	74	17.0			59	19.5	112	19.6		
Single contact	10	4.2	13	4.7			17	5.6	18	4.1			16	5.3	27	4.7		

ICD-10 = International Classification of Disease - Tenth Revision.

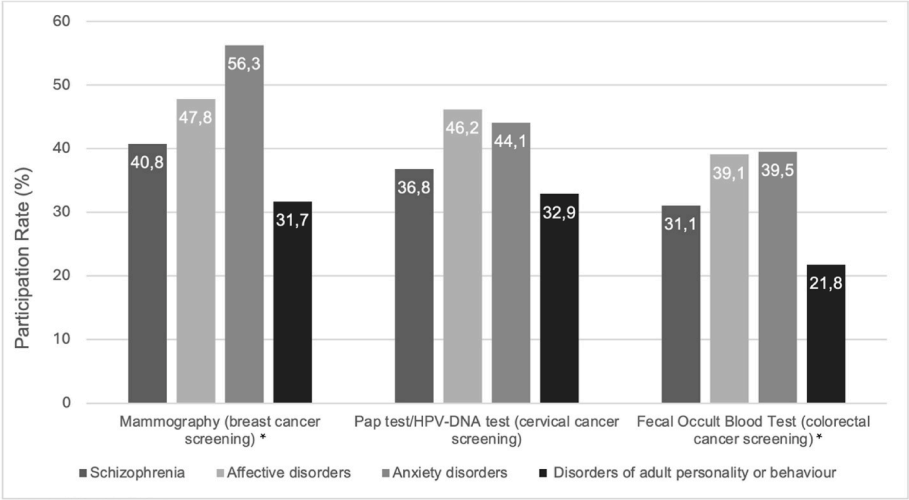

Fig. 2. Adherence to cancer screenings (%) according to psychiatric diagnosis
*: statistically significant differences ($p < 0.05$) between groups (each column represents a diagnostic group depicted by a different color).

system that integrates community-based services and promotes social inclusion, recovery, and autonomy among psychiatric service users, like the one in Trieste, could potentially increase cancer screening participation by enhancing patients' self-reliance and self-sufficiency. Having a diagnosis of anxiety disorders was a characteristic significantly more present in those who participated in breast cancer screening compared to non-participants. The correlation between anxiety and the worry of having health issues, such as the one in health anxiety and hypochondriasis (Fineberg et al., 2022; Vismara et al., 2022), could partially explain the latter finding. Health anxiety and hypochondriasis could urge patients to closely monitor their overall health, seek medical attention, and implement preventive measures. Individuals with lower participation in cervical cancer prevention programs were more likely to be unemployed, have foreign citizenship, be older, and be single or widowed, whereas those living with their own family were more likely to adhere to the program. Other studies conducted in European countries (Brzoska et al., 2020; Campari et al., 2016; Hertzum-Larsen et al., 2019) obtained similar results. There might be many reasons why women who are foreign participate in screenings to a lesser extent; first, obstacles associated with not having Italian citizenship may restrict the resources and time required to get the knowledge necessary to navigate the Italian health care system (Grandahl et al., 2015). Limited Italian language skills can influence these processes, and some foreigners may have already undergone screening in their home country, rather than in Italy. Earlier studies (Leinonen et al., 2017; Broberg et al., 2018) found a correlation of increased screening participation with being employed and being married. Schizophrenia was more common in non-participants for breast and colorectal screenings, a finding that aligns with previous research in northern European countries (Hertzum-Larsen et al., 2019), which linked this diagnosis to a lower participation rate. The latter result may indicate significant obstacles for women and men with severe psychotic disorders, whether they are Italian-born or not, in adopting appropriate health care behaviors. Interestingly, patients with adult personality and behavior disorders exhibited particularly low screening rates for breast and colorectal cancer. While the effect of such diagnoses on general medical health is known to be detrimental (Dixon-Gordon et al., 2015), only scarce evidence is present on the topic of screening attendance in patients with personality disorders. A previous study (Di Mattei et al., 2018) that looked at personality dimensions found a negative link between neuroticism and compliance to gastric cancer screening, implying that this personality trait might affect attendance at cancer screenings and ultimately cause a delay in diagnosis. On the other hand, extraversion seemed to be related to higher screening attendance. Moreover, harm avoidance appears to predict a longer time spent seeking medical attention and is inversely associated with attendance to colorectal cancer screening, potentially delaying diagnosis. The literature also suggests that low education and socio-economic status are significant independent factors associated with non-adherence to screening (Lai, Meng, 2018).

5. Limitations and strengths

Our study presents some limitations. First, the retrospective nature of our investigation hinders us from drawing strong and causal conclusions, and it also carries the inherent limitations of the design, such as recall bias. Second, we did not involve a control group, which could have been useful in adjusting for possible confounding factors. Third, we should proceed with caution when interpreting our regression model findings, as they may be susceptible to type 1 error (results from the models provided as supplementary material). Our strengths include retrieving data from a large sample of psychiatric patients and attempting to identify the individuals in this population who were most at risk of not adhering to cancer screenings.

6. Conclusions

Given that from about one third to half of our sample did not adhere to the regional cancer screening programs, there is the need to create new pathways that could facilitate access to these programs for patients with psychiatric conditions. We still lack a widespread awareness of the modifiable factors that could promote general medical health in individuals with mental disorders, as well as subsequent preventative public campaigns. Our findings may apply to other Italian psychiatric services, which follow similar general guidelines and operational procedures across the nation. It's plausible that rates in other Italian cities and regions may be even lower than those in Trieste, a city known for its historical emphasis on the complexity of individuals with psychiatric conditions, including physical health and social inclusion. Therefore, we should prioritize the medical health needs of these patients and promote integrated preventative interventions that bridge mental well-being and general medicine. Providing greater and easier access to prevention services for patients with psychiatric disorders is of paramount importance.

CRediT authorship contribution statement

S. Burato: Writing – original draft, Methodology, Conceptualization. **A. D'Aietti:** Writing – original draft, Formal analysis, Data curation, Conceptualization. **A. Paci:** Writing – review & editing, Writing – original draft, Project administration, Data curation, Conceptualization. **L. Pellegrini:** Writing – review & editing, Methodology. **G. Di Salvo:** Data curation, Investigation, Methodology, Writing – review & editing. **C. Sindici:** Writing – review & editing, Project administration, Conceptualization. **C. Dellach:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Formal analysis, Data curation, Conceptualization. **S. Negro:** Writing – review & editing, Writing – original draft, Formal analysis, Data curation, Conceptualization. **U. Albert:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Author and article information

The views expressed in this article are those of the authors. The authors report no financial relationships with commercial interests.

Declaration of competing interest

The authors report no interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jpsychires.2024.11.064.

References

Albert, U., Pellegrini, L., Maina, G., et al., 2019. Suicide in obsessive-compulsive related disorders: prevalence rates and psychopathological risk factors. Journal of Psychopathology 25, 139–148.

AIOM, 2020. I numeri del cancro in Italia 2020. aiom. https://www.aiom.it/wp-content/uploads/2020/10/2020_Numeri_Cancro-operatori_web.pdf.

Baillargeon, J., Kuo, Y.F., Lin, Y.L., 2011. Effect of mental disorders on diagnosis, treatment, and survival of older adults with colon cancer. J. Am. Geriatr. Soc. 59 (7), 1268–1273. https://doi.org/10.1111/j.1532-5415.2011.03481.x.

Benatti, B., Dell'Osso, B., Shen, H., et al., 2021. Prevalence and correlates of current suicide risk in an international sample of ocd adults: a report from the international college of obsessive-compulsive spectrum disorders (ICOCS) network and obsessive compulsive and related disorders network (ocrn) of. J. Psychiatr. Res. 140, 357–363. https://doi.org/10.1016/j.jpsychires.2021.05.054.

Broberg, G., Wang, J., Östberg, A.-L., Adolfsson, A., Nemes, S., Sparén, P., Strander, B., 2018. Socio-economic and demographic determinants affecting participation in the Swedish cervical screening program: a population-based case-control study. PLoS One 13, e0190171. https://doi.org/10.1371/journal.pone.0190171.

Brzoska, P., Aksakal, T., Yilmaz-Aslan, Y., 2020. Utilization of cervical cancer screening among migrants and non-migrants in Germany: results from a large-scale population survey. BMC Publ. Health 20 (1), 5. https://doi.org/10.1186/s12889-019-8006-4.

Campari, C., Fedato, C., Iossa, A., et al., 2016. Cervical cancer screening in immigrant women in Italy: a survey on participation, cytology and histology results. Eur. J. Cancer Prev. 25 (4), 321–328. https://doi.org/10.1097/CEJ.0000000000000173.

Carrà, G., Bartoli, F., Carretta, D., Crocamo, C., Bozzetti, A., Clerici, M., Bebbington, P.E., 2014. The prevalence of metabolic syndrome in people with severe mental illness: a mediation analysis. Soc. Psychiatr. Psychiatr. Epidemiol. 49, 1739–1746. https://doi.org/10.1007/s00127-014-0835-y.

Chang, C.K., Hayes, R.D., Broadbent, M.T.M., et al., 2014. A cohort study on mental disorders, stage of cancer at diagnosis and subsequent survival. BMJ Open 4 (1), e004295. https://doi.org/10.1136/bmjopen-2013-004295.

Chin, K., Ghosh, S., Subramaniam, H., et al., 2023. Cardiovascular disease in older people with serious mental illness: current challenges and future directions. Front. Psychiatr. 14, 1110361. https://doi.org/10.3389/fpsyt.2023.1110361.

Correll, C.U., Solmi, M., Veronese, N., et al., 2017. Prevalence, incidence and mortality from cardiovascular disease in patients with pooled and specific severe mental illness: a large-scale meta-analysis of 3,211,768 patients and 113,383,368 controls. World Psychiatr. 16 (2), 163–180. https://doi.org/10.1002/wps.20420.

Di Mattei, V.E., Mazzetti, M., Taranto, P., Bernardi, M., Carnelli, L., 2018. Personality disorders: The missing diagnosis in psycho-oncology? Clinical Neuropsychiatry: Journal of Treatment Evaluation 15, 258–271.

Dixon-Gordon, K.L., Whalen, D.J., Layden, B.K., Chapman, A.L., 2015. A Systematic Review of Personality Disorders and Health Outcomes. Can Psychol 56, 168–190. https://doi.org/10.1037/cap0000024.

Doherty, A.M., Gaughran, F., 2014. The interface of physical and mental health. Soc. Psychiatr. Psychiatr. Epidemiol. 49 (5), 673–682. https://doi.org/10.1007/s00127-014-0847-7.

Fernández de la Cruz, L., Isomura, K., Lichtenstein, P., et al., 2024. All cause and cause specific mortality in obsessive-compulsive disorder: nationwide matched cohort and sibling cohort study. BMJ 384, e077564. https://doi.org/10.1136/bmj-2023-077564.

Fineberg, N.A., Pellegrini, L., Clarke, A., et al., 2022. Meta-analysis of cognitive behaviour therapy and selective serotonin reuptake inhibitors for the treatment of hypochondriasis: implications for trial design. Compr. Psychiatr. 118, 152334. https://doi.org/10.1016/j.comppsych.2022.152334.

Fontecedro, E., Furlan, M., Tossut, D., et al., 2020. Individual health budgets in mental health: results of its implementation in the Friuli Venezia Giulia region, Italy. Int. J. Environ. Res. Publ. Health 17 (14), 5017. https://doi.org/10.3390/ijerph17145017.

Franzo, A., Gobbato, M., Gongolo, F., 2017. Qualità e monitoraggio dei programmi regionali di screening oncologico. In: Friuli Venezia Giulia.

Gilham, K., Gadermann, A., Dummer, T., et al., 2023. Mental health, cancer risk, and the mediating role of lifestyle factors in the CARTaGENE cohort study. PLoS One 18 (2), e0281588. https://doi.org/10.1371/journal.pone.0281588.

Grandahl, M., Tydén, T., Gottvall, M., Westerling, R., Oscarsson, M., 2015. Immigrant women's experiences and views on the prevention of cervical cancer: a qualitative study. Health Expect. 18, 344–354. https://doi.org/10.1111/hex.12034.

Hertzum-Larsen, R., Kjær, S.K., Frederiksen, K., et al., 2019. Participation in cervical cancer screening among immigrants and Danish-born women in Denmark. Prev. Med. 123, 55–64. https://doi.org/10.1016/j.ypmed.2019.02.023.

Kim, H., Kim, K., Kim, Y.H., 2022. Associations between mental illness and cancer: a systematic review and meta-analysis of observational studies. Eur. Rev. Med. Pharmacol. Sci. 26 (14), 4997–5007. https://doi.org/10.26355/eurrev_202207_29286.

Kisely, S., Alotiby, M.K.N., Protani, M.M., et al., 2023. Breast cancer treatment disparities in patients with severe mental illness: a systematic review and meta-analysis. Psycho Oncol. 32 (5), 651–662. https://doi.org/10.1002/pon.6120.

Lai, S., Meng, C., 2018. Socio- and clinical characteristics in relation to mammography screening compliance. J Registry Manag 45 (1), 136–142.

Launders, N., Scolamiero, L., Osborn, D.P.J., et al., 2022. Cancer rates and mortality in people with severe mental illness: further evidence of lack of parity. Schizophr. Res. 246, 260–267. https://doi.org/10.1016/j.schres.2022.07.008.

Leinonen, M.K., Campbell, S., Ursin, G., Tropé, A., Nygård, M., 2017. Barriers to cervical cancer screening faced by immigrants: a registry-based study of 1.4 million women in Norway. Eur. J. Publ. Health 27, 873–879. https://doi.org/10.1093/eurpub/ckx093.

Liu, N.H., Daumit, G.L., Dua, T., et al., 2017. Excess mortality in persons with severe mental disorders: a multilevel intervention framework and priorities for clinical practice, policy and research agendas. World Psychiatr. 16 (1), 30–40. https://doi.org/10.1002/wps.20384.

Ministero della Salute, 2021. Screening oncologici. salute.gov.it. https://www.salute.gov.it/portale/donna/dettaglioContenutiDonna.jsp?id=4511&area=Salute+donna&menu=prevenzione.

Ni, L., Wu, J., Long, Y., et al., 2019. Mortality of site-specific cancer in patients with schizophrenia: a systematic review and meta-analysis. BMC Psychiatr. 19 (1), 323. https://doi.org/10.1186/s12888-019-2332-z.

Nordentoft, M., Wahlbeck, K., Hällgren, J., et al., 2013. Excess mortality, causes of death and life expectancy in 270,770 patients with recent onset of mental disorders in Denmark, Finland and Sweden. PLoS One 8 (1), e55176. https://doi.org/10.1371/journal.pone.0055176.

Plana-Ripoll, O., Pedersen, C.B., Agerbo, E., et al., 2019. A comprehensive analysis of mortality-related health metrics associated with mental disorders: a nationwide, register-based cohort study. Lancet 394 (10211), 1827–1835. https://doi.org/10.1016/S0140-6736(19)32316-5.

Solmi, M., Firth, J., Miola, A., et al., 2020. Disparities in cancer screening in people with mental illness across the world versus the general population: prevalence and comparative meta-analysis including 4 717 839 people. Lancet Psychiatr. 7 (1), 52–63. https://doi.org/10.1016/S2215-0366(19)30414-6.

Starace, F., Mungai, F., Baccari, F., et al., 2018. Excess mortality in people with mental illness: findings from a Northern Italy psychiatric case register. Soc. Psychiatr. Psychiatr. Epidemiol. 53 (3), 249–257. https://doi.org/10.1007/s00127-017-1468-8.

Vancampfort, D., Correll, C.U., Galling, B., et al., 2016. Diabetes mellitus in people with schizophrenia, bipolar disorder and major depressive disorder: a systematic review and large scale meta-analysis. World Psychiatr. 15 (2), 166–174. https://doi.org/10.1002/wps.20309.

Valent, F., Sammartano, F., Degano, S., et al., 2020. Reasons for non-participation in public oncological screening programs in the Italian region Friuli Venezia Giulia. Publ. Health 181, 80–85. https://doi.org/10.1016/j.puhe.2019.12.005.

Vismara, M., Benatti, B., Ferrara, L., et al., 2022. A preliminary investigation of Cyberchondria and its correlates in a clinical sample of patients with obsessive-compulsive disorder, anxiety and depressive disorders attending a tertiary psychiatric clinic. Int. J. Psychiatr. Clin. Pract. 26, 111–122. https://doi.org/10.1080/13651501.2021.1927107.

Walker, E.R., McGee, R.E., Druss, B.G., 2015. Mortality in mental disorders and global disease burden implications: a systematic review and meta-analysis. JAMA Psychiatr. 72 (4), 334. https://doi.org/10.1001/jamapsychiatry.2014.2502.