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Vocational rehabilitation in persons with mental illness in India

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Vocational rehabilitation in persons with mental illness in India: A scoping review

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Keywords:	vocation, vocational rehabilitation, employment, skill training, rehabilitation, mental illness
Abstract:	<p>Background: Employment has a therapeutic impact, enhances community integration, and improves the quality of life of persons with mental illness (PwMI). Vocational rehabilitation (VR) models must be sensitive to existing needs and resources. Several VR models have been tested in high-income countries. Mapping different VR models in India would help both practitioners and policymakers.</p> <p>Aim: The study aimed to comprehensively review VR models tested among PwMI in India.</p> <p>Methods: We adhered to the Preferred Reporting Items for Systematic Reviews extension for Scoping Reviews. We included interventional studies, case studies and grey literature carried out for the VR of PwMI in India. The search was done in PubMed, PsychInfo, worldwide science and Web of Science. Google Scholar was used to supplement the search. A Boolean search using MeSH terms was carried out for the period January 2000 to December 2022.</p> <p>Results: A total of 12 studies (one feasibility study, four case studies, four institute-based intervention studies and two studies reporting NGOs' role) were included in the final synthesis. The studies included in the review were either quasi-experimental studies or case based. Types of VR included supported employment or place and train or train and place models, case management and prevocational skills training.</p> <p>Conclusion: Limited studies exist on VR in PwMI from India. Most studies assessed a restricted set of outcomes. The experiences of NGOs should be published so that practical challenges can be understood. There is a need for public-private partnerships in designing and testing services and should involve all the stakeholders.</p>

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Abstract

Background: Employment has a therapeutic impact, enhances community integration, and improves the quality of life of persons with mental illness (PwMI). Vocational rehabilitation (VR) models must be sensitive to existing needs and resources. Several VR models have been tested in high income countries. Mapping different VR models in India would help both practitioners and policymakers.

Aim: The study aimed to comprehensively review VR models tested among PwMI in India.

Methods: We adhered to the Preferred Reporting Items for Systematic Reviews extension for Scoping Reviews. We included interventional studies, case studies and grey literature carried out for the VR of PwMI in India. The search was done in PubMed, PsychInfo, worldwide science and Web of Science. Google Scholar was used to supplement the search. A Boolean search using MeSH terms was carried out for the period January 2000 to December 2022.

Results: A total of 12 studies (one feasibility study, four case studies, four institute-based intervention studies and two studies reporting NGOs' role) were included in the final synthesis. The studies included in the review were either quasi-experimental studies or case based. Types of VR included supported employment or place and train or train and place models, case management and prevocational skills training.

Conclusion: Limited studies exist on VR in PwMI from India. Most studies assessed a restricted set of outcomes. The experiences of NGOs should be published so that practical challenges can be understood. There is a need for public-private partnerships in designing and testing services and should involve all the stakeholders.

Keywords: vocational rehabilitation, employment, supported employment, mental illness, rehabilitation, skill development

Vocational rehabilitation in persons with mental illness in India: A scoping review

Introduction:

A high proportion of global disability-adjusted life years are attributable to mental illness (Whiteford et al., 2013). Severe mental illnesses (SMI) such as schizophrenia and bipolar disorder cause cognitive and functional decline, leading to disability (Green, 1996; Potkin et al., 2017). Disability leads to social exclusion and limitations in social participation (Burns et al., 2007; Cullinan, Gannon, & Lyons, 2011). Among all disabilities, SMI is associated with the highest unemployment rates (Jagannathan et al., 2020; Jaleel, Nirmala, & Thirthalli, 2015; Suresh et al., 2012).

Employment has a therapeutic impact on symptom reduction, lowers the levels of disability and enhances community integration (Bell, Choi, Dyer, & Wexler, 2014; Jagannathan et al., 2020; H Michon et al., 2011; Harry Michon et al., 2014). Employment is one of the indicators of well-being and quality of life for persons with mental illness (PwMI) (Durgoji, Muliya, Jayarajan, & Chaturvedi, 2019). Employment is a critical felt need for PwMI and their caregivers, and a significant proportion of PwMI are willing to work (Khare, Mueser, Bahaley, Vax, & McGurk, 2021; Phutane et al., 2012; Waghmare, Sherine, Sivakumar, Kumar, & Thirthalli, 2016). Barriers such as symptoms and relapse, side effects of medications, low employment expectations, negative attitude, stigma and lack of opportunity for skill training prevent them from engaging in income generation activities and employment (Rangarajan et al., 2020; Thomas, Prasad Muliya, Jayarajan, Angothu, & Thirthalli, 2019). There have been efforts from stakeholders to enhance the employment opportunities for the PwMI in India (Jagannathan et al., 2020; Ministry of Law and Justice, 2016; Rangarajan et al., 2020)

In high-income countries (HIC), employment models such as supported employment or transitional employment have been effective for PwMI (Burns et al., 2007; Drake, Bond, & Becker, 2012; Harry Michon et al., 2014; Oulvey, Carpenter-Song, & Swanson, 2013) however, many of these models are yet to be examined in low resource-settings such as in India. For example, Individualised Placement and Support (IPS) requires considerable financial and human resource investment, imposing limitations for implementation in India. Vocational rehabilitation models must be sensitive to existing needs, resources, health services and economic scenarios. The current scoping review has aimed to provide a comprehensive overview of different vocational rehabilitation models tested among the PwMI in India.

The rationale of the review

We have aimed to identify VR interventions, types, strategies, and outcomes. A scoping review was selected because it allowed exploring the breadth and depth of available evidence for the given (PCC) population, concept, and context (Peters et al., 2020, 2021; The Joanna Briggs Institute, 2015). We have included case studies and literature on NGO-based VR to provide a ground reality of VR intervention in India. The review findings will inform the mental health and rehabilitation professionals on various existing models in VR in India, the implications of these models, limitations, and future directions.

Materials and methods

Study design

The PCC criteria were used to define the eligibility criteria in the review. The population (p) was persons diagnosed with mental illness based on ICD-10 criteria (World Health Organization, 1993); we included ICD-10 categories from F20.0 to F 48.0 and the caregivers of these individuals. Concept (C) was the vocational rehabilitation/employment-related interventions in both institution/communities based, designed and provided for the population. The context (C) was India, with a prevalence of any mental morbidity of 13.67% (Gururaj G., 2016). We have included all the published research between 2000 to 2022 in this review. We have included primary studies of any design that addressed VR intervention for the population.

Search strategy

A preliminary literature search was done from January 1, 2000, to December 31, 2022. using a combination of terms "Rehabilitation, Vocational" OR "Occupational Health Services" OR "Employment, Supported" AND "Mental Disorders" AND "India"—using the electronic database of PubMed, PsychInfo, worldwide science and Web of Science. Google Scholar (search engine) was also used to supplement the search. Further, a Boolean search using MeSH terms of keywords was also carried out.

Screening and study selection

The articles were screened through the titles, and abstract and relevant articles were selected based on the following selection criteria. Peer-reviewed original studies published in English language journals were screened for inclusion in the review by the first author, ST. The articles which addressed the research question by reporting on any of the following areas were considered for inclusion in the review (1) Psychosocial interventions carried out for employment of PwMI, (2) Interventional studies, case studies, and grey literature and

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3 67 websites such as 'Worldwide Science. Org', and websites of NGOs working in the area
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5 68 carried out for employment of persons with mental illness, (3) Interventions assessing the
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7 69 employment-related outcome among the PwMI. In case of any discrepancy, the studies were
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9 70 included in the review if there was consensus amongst all the authors.

71 **Data extraction**

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12 72 Data were extracted from each source using a data extraction form developed by the first
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14 73 author ST and was independently reviewed by the other authors. Extracted data covered the
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16 74 following: author (s), year of publication, aim/purpose, study population and sample size,
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18 75 settings, study design, VR intervention type, VR intervention principles, outcome assessment,
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20 76 significant findings, and conclusion. The extracted data was transferred to a spreadsheet, and
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22 77 all the authors reviewed the information.

22 78 **Results**

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24 79 Characteristics of included sources: A total of 24411 studies were identified using the
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26 80 database. Based on the inclusion criteria, twelve studies were included in the review. We
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28 81 have included five intervention studies, four evidence-based case studies and one community-
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30 82 based rehabilitation intervention with VR components. Besides, we have included two studies
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32 83 which mentioned the role of NGOs in VR.

32 84 **Review findings**

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34 85 The section presents the scoping review findings covering the types of VR or employment
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36 86 models, the population and the settings of the intervention, and outcomes. A summary of the
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38 87 review findings has been attached in the online supplementary file (2)

39 88 **Evidence-based models of VR in India**

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41 89 Vocational skill training was the most common VR identified along with the supported
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43 90 employment model. All twelve studies were either non-RCTs or case studies. A summary of
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45 91 the review findings is attached in the supplemental file.

46 92 **Supported employment models**

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48 93 Only one interventional study reported using a supported employment model in India. The
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50 94 study was conducted in a tertiary care mental health setting to evaluate the feasibility of a
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52 95 supported employment programme for persons with severe mental disorders (SMIs)
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54 96 (Jagannathan et al., 2020). A single group pre and post without control design was used to
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56 97 test the feasibility of the interventions. Sixty-three participants with SMI (Schizophrenia 44,
57
58 98 Bipolar affective disorder 19) were recruited for the study. The study included participants
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60 99 with clinical stability, with a minimum of 10th standard education and a minimum 6-month of
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100 100 unemployment. The components of the model were a) assessment of the vocational potential

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3 101 with a vocational potential assessment scale (Harish et al., 2020) vocational counselling by
4 102 trained research staff, c) networking and liaising with various stakeholders/employers
5 103 working in the private and public sectors, d) job-related training by using train and place
6 104 model or place and train model based on individual needs and e) continuation of support for
7 105 six months. The findings from the study suggest that more than half the participants (50.8%)
8 106 were placed in competitive employment and 27% of the participants actively attempted the
9 107 placement, 11.1% of the participants required upskilling, and 11.1% of the participants
10 108 dropped out during the follow-up period. There was an improvement in the socio-
11 109 occupational functioning of the participants who participated in the intervention and a
12 110 reduction in their disability. The study also reported that more than 5 participants continued
13 111 their education for more than 6 months. Some of the study's limitations were the lack of a
14 112 control group to test the influence of other extraneous variables, such as the influence of other
15 113 psychosocial interventions; the study did not consider self-employment as a type of
16 114 employment for PwMI in this model.

115 **Evidence based on case studies on supported employment**

116
117 We identified four case studies and included detailed descriptions of 6 cases of VR in India.
118 Three case studies used a supported employment approach for persons with schizophrenia,
119 whereas one for obsessive-compulsive disorder (Jaleel, Nirmala, & Thirthalli, 2014; John et
120 al., 2017; Joshua Raymond Andrade, Praveen Arahamthabailu, 2022). The supported
121 employment approaches used in these studies were vocational assessment, skill training,
122 rapid job search based on patient choice, vocational placement, and integration of mental
123 health services into the workplace by focusing on regular follow-up. The studies found that
124 supported employment approaches helped enhance vocational skills, assisted in vocational
125 placement, job retention and financial independence for more than one year. In addition, the
126 studies also reported improvement in the socio-occupational functioning of the participants,
127 thus, leading to reduction in symptoms and disability. The third case study used a family-
128 centric rehabilitation approach by integrating the supported employment intervention with
129 other psychosocial interventions and found improvement in vocational skills, identification of
130 suitable employment and placement, retention of employment for more than one year,
131 symptom reduction, functionality improvement and psychosocial well-being of the entire
132 family (Thekkumkara et al., 2020). Besides, the approach mentioned the role of disability
133 welfare benefits such as reservation for employment, reasonable accommodation and other
134 social security schemes based on the Rights of Persons with Disability Act (RPWD) 2016 to

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3 135 ensure the entire family's welfare. The standard approach used in all the case studies was the
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5 136 case management approach for providing VR services. The services provided by the MHPs
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7 137 were assessments of vocational skills, direct VR interventions, collaboration and coordination
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9 138 with vocational skill training centres, vocational instructors, and potential employers in the
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11 139 private and public sectors. The case studies emphasised the need for a case management
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13 140 approach through continuous evaluation and follow-up.

141 **Tertiary care centre-based vocational rehabilitation models.**

142 Four studies (Gandhi et al., 2014; Neethumol Xaviour, Seema P. Uthaman, 2022; Roy et al.,
143 2019; Suresh Kumar, 2008) used a tertiary care centre-based vocational rehabilitation model.
144 The interventions' settings were day-care-based vocational rehabilitation centres as adjuncts
145 to the psychiatry department. Two of these studies were conducted at the Psychiatric
146 Rehabilitation Services of the National Institute of Mental Health and Neurosciences
147 (NIMHANS), Karnataka, India. The other two included studies were undertaken in the
148 rehabilitation units at the Institute of Mental Health and Neuro Services (IMHANS), Kerala,
149 India. The interventions included vocational skill assessment, prevocational training in
150 various sections of the day-care - candle making, bakery, paper printing, computer basics,
151 green skills, paper cup making, bag and umbrella-making, and included other psychosocial
152 interventions from the multidisciplinary team members. The training was provided for both
153 inpatients (for meaningful engagement, symptoms management, and pre-vocational skill
154 training) and outpatients day boarders (as a part of activity scheduling, prevocational skill
155 learning, vocational skill learning, and source of behaviour-based incentives). The studies
156 reported improvement in work performance, treatment adherence, self-esteem, quality of life
157 and well-being of the participants (Gandhi et al., 2014; Suresh Kumar, 2008). Moreover,
158 these models depicted improved quality of life and caregivers (Neethumol Xaviour, Seema P.
159 Uthaman, 2022). In one of the studies (Roy et al., 2019), the vocational rehabilitation model
160 used was Holi colour-making using flowers conducted by collaborating with a non-
161 governmental organisation (NGO). The primary outcome of this model was profit sharing
162 with all the participants based on their performance and contribution.

163 **Community-based rehabilitation models**

164
165 The community-based rehabilitation models (CBR) have primarily focused on the elements
166 of the CBR matrix proposed by World Health Organization (WHO, 2010), focusing on skill
167 training and vocational rehabilitation under the matrix employment. The study conducted to
168 understand the effectiveness of CBR on the disability of persons with schizophrenia in rural

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3 169 community settings in India adopted a randomised control trial design (Chatterjee et al.,
4 170 2014). The trained lay health workers delivered the interventions on the various components,
5 171 including “Individualised rehabilitation strategies to improve the personal, social, and work
6 172 functioning of participants”. The VR interventions provided were vocational counselling,
7 173 referral services and skill training (Balaji et al., 2012; Chatterjee et al., 2014).

174 **Vocational rehabilitation interventions initiated by the NGOs**

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176 NGOs provide a plethora of VR interventions in institutions and the community. An
177 exploratory study was conducted to understand the income generation programmes for PwMI
178 and the challenges faced, using a mixed methods approach of field visits and qualitative
179 interviews across 13 mental health rehabilitation centres while gathering the details of
180 interventions and challenges (Roy, Jayarajan, & Sivakumar, 2020). The study identified that
181 most NGOs were private, located in urban areas, and provided residential and VR
182 interventions. The centres follow a mixed method of vocational training, including vocation-
183 based skill training or transitional employment process, looking at the local resources and
184 viable employment opportunities particular to that community. The vocational/income
185 generation activities included household consumables, paper products, textile products,
186 handicrafts, food products, animal husbandry, jute products, horticulture and running the
187 shops. The VR activities were reported to be a collaboration between the PwMI, caregivers,
188 NGOs and other stakeholders. The personnel involved in most of the NGOs were vocational
189 instructors, mental health professionals and other NGO staff. The study has detailed
190 descriptions of NGOs' vocational/income generation activities. Another study conducted to
191 understand the human resources and models of mental healthcare integration into primary and
192 community care in India recorded the VR initiatives by NGOs such as Chellamuthu trust, The
193 Volunteers for Community Mental Health (VOLCOMH) outreach programme at Mizoram,
194 Medico Pastoral Association, Enable India and the Richmond Fellowship Society of India
195 (Chowdur, Dharitri, Kalyanasundaram, & Suryanarayana Rao, 2011; Jaleel et al., 2014;
196 Rohini Kesavan Rajeev, 2022; van Ginneken et al., 2013).

197 **Discussion**

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199 In India, the employment needs of PwMI have been explored, and the importance of VR
200 interventions for improving employment outcomes among PwMI has been recognized
201 (Durgoji et al., 2019; Jagannathan et al., 2020; Samuel, S., & Jacob, 2020; Waghmare et al.,
202 2016). The current review shows that only limited evidence exists for VR in India. Our
203 review has highlighted the benefits of the existing models of VR, the approaches, and

204 outcomes specific to India. Many tertiary care centres have psychiatry units that provide VR
205 services as part of the various psychosocial interventions, yet only twelve published studies
206 could be identified. The studies identified were either case studies or quasi-experimental
207 research designs, emphasizing the need for more experimental studies. Though one RCT on
208 CBR was included in the review, the results of the study did not explicitly report the VR
209 process. The reasons for the limited literature maybe because most of the VR services are
210 provided by NGOs who may not necessarily engage in evidence-based research. Another
211 reason could be that compared to the number of organizations providing VR in HIC, there is
212 lack of a systematized VR service in India. The paucity of funds allocated to the mental
213 health and disability sector could be the reason for limited research in the area (Math et al.,
214 2019; Vashist, Kukreti, & Taneja, 2022). Rehabilitation may be construed as not related to
215 the health sector directly and to be dealt by the social justice and empowerment sector.
216 Intersectoral coordination may be challenging.

217 Supported employment is the best evidence-based practice in VR from HIC
218 (Kinoshita et al., 2013). Only one study had tested the feasibility of the model in India
219 (Harish et al., 2020; Jagannathan et al., 2020). Placement status, job retention, and impact of
220 employment on disability rates and functionality have been regarded as essential outcome
221 variables in the studies conducted in HIC and the study conducted in India also reported
222 outcomes on these variables(Harry Michon et al., 2014; Wallace & Tauber, 2004). Further,
223 the study recorded participants' experience while availing of the supported employment
224 services. The model was tested after the Rights of Persons with Disabilities Act (RPWD),
225 2016 (Ministry of Law and Justice, 2016). It incorporated some of the critical provisions of
226 the Act, such as reasonable accommodation and recognizing high support needs. A study
227 conducted in India has elucidated the importance and nature of reasonable accommodation in
228 employment for persons with psychiatric disabilities (Rangarajan et al., 2020). The study
229 indicates the need to upscale the model with more rigorous research methods like RCTs.

230 The other published studies in the review were case studies that used various
231 components of the supported employment model. The case studies included in the review
232 consistently reported improvement in psychopathology, global functioning, and reduction in
233 overall disability levels, similar to findings with supported employment outcomes as reported
234 in a systematic review (Burns et al., 2007; H Michon et al., 2011). The included studies have
235 emphasized a multidisciplinary approach to delivering the services, which includes
236 psychiatric social workers, psychiatrists, clinical psychologists, psychiatric nurses, and

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3 237 vocational instructors (Dobbins, Thomas, Melton, & Lee, 2016; Liberman, Hilty, Drake, &
4 238 Tsang, 2001).

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6 239 The review highlights the role of tertiary care centre-based day care centres in
7 240 providing VR services. Tertiary care centres-based VR models are often considered a
8 241 traditional model of rehabilitation (Murthy, Isaac, & Dabholkar, 2017; Waghmare et al.,
9 242 2016) that serve many purposes such as engagement in meaningful activities, a multitude of
10 243 opportunities for graded exposure to work, prevocational and vocational skill training and
11 244 transition to employment. Some centres have moved to a concept called profit sharing (Roy
12 245 et al., 2019). Most of these centres employ inpatients and outpatients in tertiary care centres
13 246 (Chandrasekaran et al., 2022; Neethumol Xaviour, Seema P. Uthaman, 2022; Roy et al.,
14 247 2020; Thekkumkara et al., 2020). However, these centres are not restricted to persons with
15 248 psychiatric disabilities and have reported outcomes in persons with intellectual
16 249 developmental disabilities and other physical and neurological disabilities (Chandrasekaran et
17 250 al., 2022; Roy et al., 2019). Studies show improvement in caregiver's burden, enhanced well-
18 251 being, and coping apart from improved patient-related outcomes secondary to the VR
19 252 (Chandrasekaran et al., 2022; Neethumol Xaviour, Seema P. Uthaman, 2022; Thekkumkara
20 253 et al., 2020). A national survey conducted to understand the conditions of mental health
21 254 centres across the country with special reference to the female persons with mental illness
22 255 found that out of 26 tertiary care mental health centres, 18 provided VR interventions
23 256 (National Commission for Women, 2019). The survey indicated that in most tertiary care
24 257 centres, the training provided needed to be more adequately utilized as a means for recovery
25 258 and as a source of income for the PwMI (National Commission for Women, 2019). In
26 259 addition, the survey found that these skills are all conventional with limited market value and
27 260 offer a minimal scope for a treated PwMI to become economically self-reliant. A few
28 261 institutions have adopted skills training that may be contemporarily relevant in the Indian
29 262 context, such as mobile cover making, gift packing, screen printing, handicrafts, leather toy
30 263 making, painting, craftwork, music, gardening, and goat rearing (National Commission for
31 264 Women, 2019).

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51 265 The review has identified that either train and place or place and train models were
52 266 used in the studies. The train and place model focuses on generic work skills and personal
53 267 development training in such areas as confidence building, assertiveness, communication
54 268 skills, activities of daily living skills and stress management (Danley & Anthony, 1987). In
55 269 this model, the participants must learn pre-vocational and work readiness skills before they
56 270 are placed in work settings which are often sheltered workshops under the supervision of

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3 271 mental health professionals or owned by hospitals or rehabilitation agencies (Rinaldi &
4 272 Perkins, 2007). In contrast, the place and train models focus on placing the person in
5 273 competitive employment by liaising and then training the person in a set of skills necessary
6 274 for work (Kinoshita et al., 2013).

7 275 Based on the principle of empowerment and recovery and through a partnership of the
8 276 MHPs and the PwMI, the clubhouse model of VR can be an alternative that needs to be
9 277 explored in VR. Systematic reviews have reported the effectiveness of the model in
10 278 improving the quality of life, employment outcomes and reducing the rates of relapse and
11 279 hospitalization of PwMI. Though these models were tested in the 1950s in HIC no published
12 280 literature was found that used the clubhouse model in India (Battin, Bouvet, & Hatala, 2016).
13 281 SEVAC, based in Kolkata, India is probably the only clubhouse in the country that is
14 282 recognised by the Clubhouse International (Battin et al., 2016; Sevac, n.d.)

15 283 NGOs play a vital role in providing rehabilitation services in India (Thara & Patel,
16 284 2010). The role of NGOs in delivering VR has been recognized (Jaleel et al., 2015; Thara &
17 285 Patel, 2010), yet there is a shortage of published literature on VR interventions provided by
18 286 NGOs. Many NGOs provide VR-based intervention in institutional and community
19 287 rehabilitation settings but limited scientific reporting can lead to constraints in replicating
20 288 these models in other centres (Chowdur et al., 2011; Jaleel et al., 2014; Rohini Kesavan
21 289 Rajeev, 2022; Sahu, Niveditha, Dharitri, & Kalyanasundaram, 2014). There are government
22 290 institutions such as Lokapriya Gopinath Bordoloi Regional Institute of Mental Health
23 291 (LGBRMH), Tezpur, and NIMHANS, Bengaluru, that have initiated a partnership with
24 292 NGOs for VR interventions (Roy et al., 2019). Most NGOs are in urban areas, and there is a
25 293 requirement for rural-based VR opportunities. To overcome these challenges, the
26 294 Government of India's flagship programmes, such as the Skill India programme
27 295 (Thekkumkara, Jagannathan, & Sivakumar, 2021), other government-initiated skill training
28 296 programmes such as 'Manasadhara' day care centres (Karanataka, n.d.), regional vocational
29 297 skill training centres for women (Ministry of Skill Development and Entrepreneurship, n.d.),
30 298 and the locally available microfinance self-help groups, can be utilized (Nair, Jagannathan,
31 299 Kudumallige, Kumar, & Thirthalli, 2018; Ravilla et al., 2019).

32 300 Considering the population in rural areas, CBR can significantly contribute to the VR
33 301 of the persons residing in rural Indian communities (Balaji et al., 2012; Chatterjee, Pillai,
34 302 Jain, Cohen, & Patel, 2009; Sivakumar, 2019). The advantages of such intervention include
35 303 understanding the local situations, community needs, local resources, and employment
36 304 demands and providing VR interventions based on the prevailing needs (Ravilla et al., 2019).

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3 305 Based on the CBR models, studies have been conducted in the community, and vocational
4 306 components were included in the interventions; however, a detailed description of the
5 307 specific VR provided, and process have not been explicitly recorded (Chatterjee et al., 2009;
6 308 Patel et al., 2011). The components of CBR, such as self-help groups, can be explored for its
7 309 viability for persons and caregivers with mental illness in the community (Nair et al., 2018).
8 310 Assertive Community Treatment has been tested and reported effective in HIC (Gold et al.,
9 311 2006; Waynor & Dolce, 2015). ACT model has been explored rarely in the Indian context
10 312 except for one published report. However, it did not record employment outcomes (Praveen
11 313 A et., al 2022).

12 314 In India, while considering the employment/VR interventions for PwMI, the
13 315 approaches must be designed by understanding the ground realities. The requirements
14 316 ensured under the RPWD, 2016 for persons with disabilities must be incorporated carefully
15 317 (Ministry of Law and Justice, 2016). The provisions, such as reasonable accommodations and
16 318 higher support needs, would encourage a PwMI to engage in competitive employment and
17 319 may also enhance recovery. MHPs must advocate for ensuring workplace reservations and
18 320 reasonable accommodations for PwMI. A minimum of four percentage of public sector
19 321 employment has been reserved for persons with disabilities, including one per cent for
20 322 persons with disabilities due to mental health conditions and multiple disabilities (Sharad
21 323 Philip, Ranjitha Prakash, Avinash Shekhar, 2022). Assistance by MHPs to the PwMI in
22 324 registering with the special employment exchange or the government-initiated online services
23 325 such as Swarajability would enable them to identify employment fairs and may increase the
24 326 chances of employment (India, n.d.; Ramasubramanian, Mohandoss, & Namasivayam, 2016).
25 327 PwMI have been included in the Mahatma Gandhi National Rural Employment Guarantee
26 328 Act (MNREGA) programmes (Ministry of Rural Development, 2013), which guarantees
27 329 minimum employment and wages for PwMI and the National Handicapped Finance and
28 330 Development Corporation (Disabilities, n.d.) provides subsidized loans for various
29 331 microfinance self-employment programmes.

30 332 Partnerships between NGOs and tertiary care centres would provide a platform for
31 333 adapting and developing some VR approaches among the PwMI (Patil, Patil, Tekkalaki,
32 334 Chate, & Patil, 2022). For designing and implementing any model of VR, human resources
33 335 (occupational therapists, placement officers, vocational instructors) who can integrate with
34 336 mental health services are essential. The existing mental health care centres should focus on
35 337 enhancing human resources and ensuring the provision of VR services to mental health
36 338 service users. The upcoming National Institute of Mental Health Rehabilitation at Sehore

339 (Ministry of Social Justice & Empowerment, n.d.) can play a vital role in developing, testing
340 and implementing the models of VR for the PwMI so that the District Mental Health
341 Programme, NGO and other tertiary mental health care centres can deliver VR services for
342 PwMI.

343 **Strengths**

344 The selection of studies was not restricted to a particular model of VR, and we have included
345 all the available literature, including case studies. While reporting, we have adhered to the
346 JBI scoping review method and PRISMA-ScR guidelines for writing scoping reviews.

347 **Limitations**

348 The review identified a small number of studies overall and included case studies. We have
349 only included VR interventions relevant to psychiatric disabilities and have not focused on
350 IDD or other developmental disabilities. Many VR interventions could be common with
351 PwMI and there could be several needs that may need to be individualized.

352 **Conclusions**

353 A limited number of studies have been published on VR for PwMI from India. Most studies
354 are either feasibility studies or case studies assessing only a few outcome variables.
355 Indigenous models and adaptations of successful models reported elsewhere (e.g., the
356 supported employment) must be developed and tested through rigorous experimental studies.
357 The experiences of NGOs need to be published so that practical challenges can be
358 understood. There is a need for more public and private partnerships in designing and testing
359 services involving all the stakeholders.

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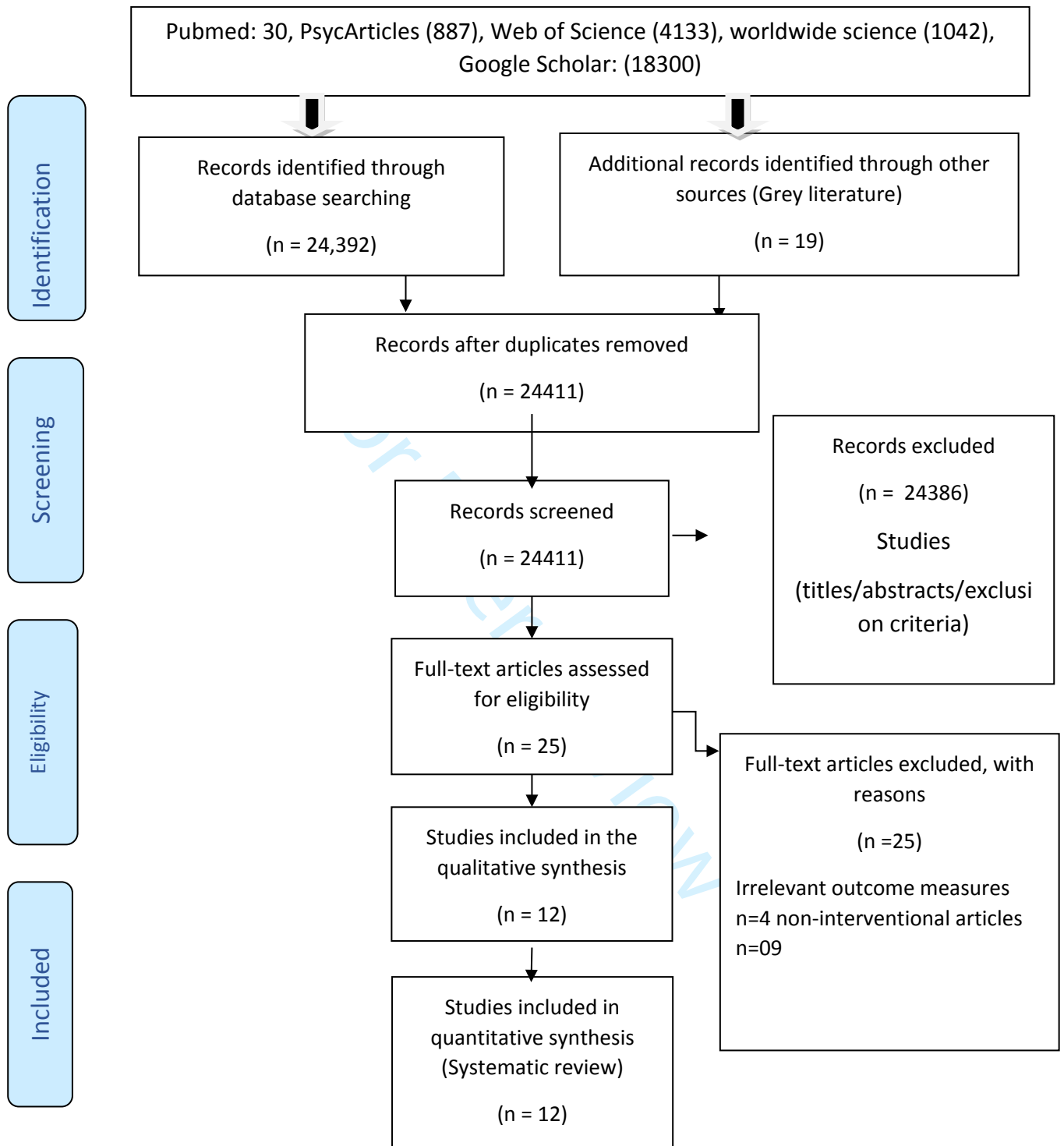
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Author/s and Year	Research design, Aims and purpose	Participants, sample size and settings	Intervention type and comparator, concept, duration of intervention	Outcome assessment	Key findings related to the research questions	Conclusion
Interventional studies						
(Jagannathan et al., 2020)	<p>Feasibility study Quasi-experimental research design: Pre and post-without control</p> <p>The study was conducted to test the feasibility of a supported employment program for persons with severe mental disorders.</p>	<p>Persons with severe mental disorders (Schizophrenia and Bipolar affective disorder)</p> <p>Sample size: 63</p>	<p>The components of the supported employment developed were (a) assessment of vocational potential, (b) vocational counselling, (c) networking and liaison with prospective employers, (d) job-related training and placement and (e) continued support for six months. The interventions were provided by a multidisciplinary team including Rehabilitation professionals, psychiatric social workers, psychiatrists, clinical psychologists, psychiatric nurses and vocational instructors.</p>	<p>Job placement status, social and occupational functioning and disability and employment benefits were assessed using qualitative interviews.</p>	<p>Forty employers in different areas were contacted and collaborated on the placement. 32 out of 63 were placed in various competitive employment, attempted for 17 participants, 7 (11.1%) were referred for skill training, and 7 (11.1%) dropped out. The study found a reduction in disability scores and an improvement in the socio-occupational functioning of the participants. Five of the participants continued their job</p>	<p>One of the first studies tested the feasibility of supported employment. The intervention was developed based on India's social, occupational, and legal specificity. The provisions such as reasonable accommodation and high support needed to be ensured in the RPWD Act of 2016 were incorporated into the intervention. The intervention needed to be tested for its effectiveness</p>

					for more than six months.	with rigorous methodology.
(Chatterjee et al., 2014)	Prospective comparative study design	Persons with chronic schizophrenia availing treatment from community-based mental health programme	One of the components of the intervention was vocational counselling and access to social benefits.	Positive and Negative Symptom Scale Disability assessment scale Clinical; characteristics	There is a significant improvement in the score of occupational functioning.	Vocational counselling and skill training was included as a component of CBR.
Case studies						
(Neethumol Xaviour, Seema P. Uthaman, 2022)	Post-test only design To understand and compare the quality of life and caregiver burden among the caregivers of PwSMI attending vocational training centres.	The caregivers of persons with severe mental illness. Sample size: 60	The intervention group received vocational rehabilitation services, including skill assessment, prevocational skill training, and vocational engagement in the different units, along with other psychosocial interventions. The comparison group received outpatient-based psychosocial interventions.	Caregivers' burden was assessed using the Burden Assessment Scale (BAS), and quality of life was assessed by using the WHO quality of life scale.	The assessment found that the caregivers of patients attending the day-care skill training programme have reported significantly lower burdens. The study also showed a significantly higher quality of life in various domains of WHOQOL-BREF.	The study finding suggests that a vocational model of rehabilitation and skill training can enhance the caregiver's wellbeing and quality of life and improve the psychosocial domains of PwSMI.
Roy A et al., 2019	The study is based on an income generation	The participants are inpatients, day borders and	It was a joint effort by the 'Green Skill section' of Psychiatric Rehabilitation	Profit sharing is based on the productivity, challenges, and	Participants were divided into three groups, and The incentive ranged	The study has given a detailed description of income

	programme (Eco-Friendly Holi Colors) conducted in psychiatric rehabilitation services in a tertiary care centre.	day boarders from children's homes for the mentally retarded (CHMR). Nine persons with (IDD) and 17 persons with MI	Services, NIMHANS and Craftizen Foundation (NGO). The intervention was focused on the planning of income generation activity (Holi colour making for Holi, a cultural festival in India) based on the resources such as flowers and different processes of product making.	facilitators of such income generation activity.	from ` 200-` 2500 per person (Group I = ` 2500/person, Group II = ` 1500/person, Group III = ` 1000/person, Group IV = ` 500/person and Group V = ` 200-300/person).	generation activity in a tertiary health care centre. The challenges reported were issues with the supply of raw materials and technical issues.
(Gandhi et al., 2014)	A quantitative, descriptive correlational research design	The participants were persons with severe mental disorders who were availing of rehabilitation interventions, including vocational rehabilitation, for more than one month from a tertiary care centre.	The study was conducted to explore the relationship between medication adherence, work performance and self-esteem among patients with mental illness. The participants received vocational rehabilitation services, including skill assessment, prevocational skill training, and vocational engagement in the different units in the psychiatric	Medication Adherence Rating scale to assess compliance, Griffiths work behaviour scale to understand job-related skills, and Rosenberg's Self-esteem scale to evaluate the self-esteem of the participants	The subjects had good mean medication adherence of 8.4 ± 1.5 and a good mean work performance of 88.62 ± 22.56 . Although weak and not significant, there was a positive correlation ($r = 0.22$, $P = 0.103$) between medication adherence and work performance; a positive correlation between ($r = 0.25$, P	Medication monitoring and strengthening of work habits can improve self-esteem, thereby strengthening the hope of recovery from illness

		Sample size: 60	rehabilitation service of NIMHANS, along with other psychosocial interventions.		= 0.067) medication adherence and self-esteem; a positive correlation between ($r = 0.136$, $P = 0.299$) work performance and self-esteem.	
(Suresh Kumar, 2008)	Nonrandomised two-group comparison design The study was conducted to identify and compare social functioning, cognitive functioning and psychopathology.	Persons with schizophrenia with a minimum duration of two years. Group 1: The participants who received vocational rehabilitation for at least six months, and group 2 participants were the patients not receiving any rehabilitation services.	Group 1 (Intervention group) received vocational training in notebook preparations, bookbinding, offset printing, carton making, medicine cover making and horticulture. The vocational rehabilitation centre is part of a tertiary care centre hospital.	Socio-demographic details, social functioning using SCARF social functioning index, mini-mental status examination, positive and negative symptom scale	The results showed a significant improvement in social, cognitive and psychopathology in the intervention group.	The study concludes that vocational rehabilitation can improve social and cognitive functioning. Further, it also reduces psychopathology.
(Joshua Raymond Andrade, Praveen	Case study N=1	Persons with Schizophrenia	Components of VR used were assessment, vocational and other job-related skill	Indian Disability Evaluation and Assessment Scale	The vocational skills and job-related skill development.	The components of supported employment enabled a person

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Arahanthabailu, 2022)			training, rapid job searching and continuous support.	(IDEAS) to assess disability. Social and Occupational Functioning Assessment to assess the functionality. Burden Assessment Schedule to assess the burden.	Vocational placement and integration of mental health care and continuous follow-up. Improvement in functionality, reduction of disability and job retention of more than one year.	to gain employment and improvement in socio-occupational functionality.
(Thekkumkara et al., 2020)	Case study N=2	Persons with Schizophrenia	The approach used was the train and place model. The components of VR include vocational assessment, prevocational skill training, on-site placement, negotiation with the employer emphasising RPWD 2016 provisions, job placement, integrated mental health care in the workplace and ongoing support.	The employment outcome was reported along with the overall family's social upliftment.	The vocational skill development, job placement and retention of employment for more than one year. The family's socioeconomic conditions have improved.	The model of family-centric rehabilitation enabled the whole family's upliftment.
(John et al., 2017)	Case study	The person with	The components of the train and place model	The International Classification of	The MH team has done vocational	The components of supported

		Obsessive-compulsive disorder	of supported employment were used for VR. The components used were assessment, job searching, interview preparation, job placement and continuous support.	Functioning, Disability and Health (ICF) checklist was used to describe the client's functional level and disability; Vocational Training Compliance Scale (VTCS) was used to assess the client's compliance with the job; Yale-Brown Obsessive Compulsive Scale (Y-BOCS) was used to quantify the client's syndrome severity	profiling to understand the skills, strengths and potential employment opportunities. Vocational placement in a school. Ongoing support has been provided by the team. The intervention helped to reduce the symptom severity and disability and improved the functionality of the case.	employment helped in job placement, job retention and psychosocial well-being.
(Jaleel et al., 2014)	Case study N=2	A case of schizophrenia with a mild intellectual developmental disorder and a case of schizophrenia	The study used a place-and-train approach of VR along with the principle of Individualised placement and support model. The components used were assessment, job	Job placement and retention of job.	The study has not used any of the scales to assess the outcome. However, reported job retention for more than ten months.	The supported employment model's public and private partnership approach enabled the team to identify and place the persons for

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			matching process, preparing for a job interview, collaboration with the employer, and follow-up and support in partnership with an NGO working in the area.			suitable employment.
NGOs and vocational rehabilitation models						
(Roy et al., 2022)	Overview of income generation programmes (IGP) by NGOs	Persons with mental illness and intellectual developmental disorders	The study has overviewed 13 rehabilitation centres and their vocational rehabilitation activities. In summary, the authors included information related to income generation activities, skills training information and information from the staff working in the NGOs.	Observation visits and interviews.	Most centres were based in south India and urban areas. The range of IGPs ranged from 2 to 7. The range number of participants was 20-50. Some activities included manufacturing household consumables, paper, textiles, handicrafts, food, and jute products. NGOs are also involved in animal husbandry and running small shops.	The overview summarises the need for understanding VR interventions based on local resources and demands. Besides, the study overviews various income generation processes through VR activities.
(Van Ginneken et al., 2017)	Overview of human resource	The study explores and	The study explored 72 programmes	The study reviewed the	The study identified different models in	The study gives an overview of

	and models of mental health care in India.	compares Indian models of mental healthcare delivered by primary-level workers (PHW) and health workers and their role within the organisation.	(governmental and non-governmental), their services, structures and staffs role in a multidisciplinary team.	programmes and conducted interviews with the staff identified.	the community, which include the specialist community models, and lay person delivered community-based models in mental health care. The study reported the role of NGOs in VR and income generation.	various organisations and their initiatives in the area of VR and mental health care in general.
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Pubmed (((((((("Rehabilitation, Vocational"[Mesh]) OR "Income"[Mesh]) OR "Employment, Supported"[Mesh]) OR "Adult Day Care Centers"[Mesh]) OR "Sheltered Workshops"[Mesh]) AND ("Mental Disorders"[Mesh] OR "Substance-Related Disorders"[Mesh])) AND "India"[Mesh]

World of science/ google scholar: Rehabilitation, Vocational OR Employment, Supported OR Sheltered Workshops OR Community-Based Participatory Research Or Income generation AND "Mental Disorders or Substance use disorders AND "India"

Web of Science (((((((((((TS=(vocational rehabilitation)) OR TS=(rehabilitation)) OR TS=(employment)) OR TS=(occupation)) OR TS=(supported employment)) OR TS=(income generation)) OR TS=(adult day care centres)) AND TS=(mental disorders)) OR TS=(mental illness)) OR TS=(psychiatric illness)) OR TS=(severe mental disorders)) AND TS=(India)

PsychArticles: Any Field: rehabilitation OR Any Field: vocational OR Any Field: occupation OR Any Field: employment OR Any Field: income generation OR Any Field: community based OR Any Field: vocational rehabilitation OR Any Field: supported employment OR Any Field: skill training AND Any Field: severe mental disorders OR Any Field: mental disorders OR Any Field: mental illness OR Any Field: psychiatric disorders OR Any Field: psychiatric illness AND Any Field: India OR Any Field: india OR Any Field: Indian population AND Population Group: Human AND PsycInfo Classification: 3200 Psychological & Physical Disorders AND Year: 2000 To 2022

PsycArticles: 887
 Pubmed:30
 World wide science 1042
 Web of Science 4133
 Google scholar 18300