

1 Does the Nae Umeed group intervention improve mental health and
2 social participation? a pre-post study in Uttarakhand, India

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14 Impact statement

15 In low- and middle-income countries (LMICs) such as India, families provide most care for
16 the rising number of people with chronic illness. Those providing regular care to someone
17 with a long-term care need outside of a formal framework, for example within the context
18 of a family relationship, are called caregivers. This includes about one in six adults.

19 Around the world, caregivers are at high risk of mental health problems such as depression.
20 Various interventions have been developed to support caregiver mental health including
21 educational and counselling interventions for individuals and groups. However few caregiver
22 interventions have been developed and shown to work in LMICs.

23 This is important because interventions work best when they are designed to meet local
24 needs and are sensitive to cultural, social, and economic context. In India, caregivers who
25 are less educated, financially worse-off, socially isolated, or female generally have worse
26 mental health. These same factors make getting help from health services more challenging,
27 so interventions must also be delivered in ways that are accessible for those in need.

28 We investigated how a locally developed group intervention, *Nae Umeed*, could promote
29 mental health in Dehradun, Uttarakhand, India. *Nae Umeed* was first implemented in
30 disadvantaged parts of Dehradun through a community mental health non-profit over
31 August-November 2020. Although the intervention was initially designed to support
32 caregivers, participants in this study were mostly people with disability and other vulnerable
33 community members. Community health workers facilitated a series of group sessions on
34 topics such as self-care and accessing entitlements. We collected data on measures of
35 mental health and social participation before and after the intervention. Mean scores on
36 these measures improved significantly. These findings suggest *Nae Umeed* may improve the
37 mental health of participants, and that locally developed community-based group
38 interventions can help to address mental health disparities in South Asia.

39 Abstract

40 There are few evidence-based interventions developed for low- and middle-income
41 countries (LMICs) to support caregiver mental health. *Nae Umeed* is a community-based
42 group intervention designed primarily for caregivers that was developed collaboratively
43 with local community health workers in Uttarakhand, India. This pre-post study aimed to
44 assess whether *Nae Umeed* positively influenced mental health and social participation for
45 people with mental distress, including caregivers in North India.

46 The intervention consisted of 14 meetings in small groups following a structured curriculum
47 and facilitated by community health workers. Among 115 adult participants, 20% were
48 caregivers and 80% were people with disability and other vulnerable community members;
49 62% had no formal education and 92% were female. Substantial and statistically significant
50 improvements occurred in validated psychometric measures: mental health (12-Item
51 General Health Questionnaire, Patient Health Questionnaire-9) and social participation
52 (Participation Scale). Improvements occurred regardless of caregiver status.

53 This intervention addressed mental health and social participation for marginalised groups
54 that are typically without access to formal mental health care. Findings suggest *Nae Umeed*
55 improved mental health and social participation, however a controlled community trial
56 would be required to prove causation. Community-based group interventions are a
57 promising approach to improving the mental health of vulnerable populations in South Asia.

58

59 Graphical abstract



60

61 Keywords

62 Caregiver; carer; India; group intervention; mental health; depression.

63 Background

64 Caregiving is an increasingly significant global public health issue as increasing proportions
65 of aging populations live with disability (Crimmins et al. 2016). Issues around the wellbeing
66 of caregivers are important for their personal health and the people they provide care for,
67 as well as for the sustainability of health and social care systems to which they are integral
68 (Talley and Crews 2007). This latter consideration is especially relevant in countries like
69 India, where the demographic transition towards greater noncommunicable disease burden
70 is not matched by increases in health systems capacity (Bollyky et al. 2017), and where
71 family members provide nearly all care for individuals with chronic illness or disability.

72 Caregiving is associated with both reward and fulfilment, as well as significant challenges
73 (Schulz and Sherwood 2008). These challenges, termed 'burden' (Platt 1985), can adversely
74 affect caregiver physical, mental, and social wellbeing (Schulz and Sherwood 2008).
75 Negative mental health impacts from caregiving are consistently described and depend on
76 local cultural and socioeconomic contexts (Bastawrous 2013) in addition to individual and
77 interpersonal factors including the relationship between the caregiver and person with
78 disability, type of disability, and age and gender of the caregiver (Pinquart and Sörensen
79 2003).

80 Despite India's huge diversity, there are common contextual factors that likely shape
81 caregivers' mental health. Non-biomedical explanatory models of mental illness are
82 widespread (Poreddi et al. 2015, Chakrabarti 2016), which typically ascribe responsibility for
83 the illness to the person being cared for (Poreddi et al. 2015), and lead to societal stigma
84 and social exclusion (Mathias et al. 2015, Venkatesh et al. 2015). As in other parts of the
85 world (Macintyre et al. 2018), economic disadvantage is strongly associated with mental ill-
86 health (Mathias et al. 2015), and in 2019 10% of the Indian population lived below the
87 international poverty line of \$2.15 USD/day (The World Bank 2022). The gender relations in
88 India mean that most caregivers are female (Janardhana et al. 2015, Chakrabarti 2016).
89 Women in India may experience greater challenges in sustaining caregiving due to
90 systematic disadvantage, leading to feelings of hopelessness and overwhelming stress
91 (World Economic Forum 2021)(Mathias et al. 2019). India's existing health system is not
92 geared towards supporting caregivers' mental health (Chakrabarti 2016) due workforce
93 shortages, limited public mental health services, and high out-of-pocket costs for consumers
94 (Patel et al. 2015).

95 Caregiver 'burden' and associated mental health impacts in India have been described in
96 those caring for people diagnosed with stroke (Mandowara et al. 2020), cancer (Menon et
97 al. 2022), cirrhosis (Hareendran et al. 2020), psychosocial disability (Brinda et al. 2014,
98 Stanley et al. 2017, Singh et al. 2021), and dementia (Pattanayak et al. 2010, Srivastava et al.
99 2016). However, a large proportion of those with disability who receive care do not have a
100 formal diagnosis (Chakrabarti 2016). Across different disabilities, commonly identified

101 predictors of higher caregiver 'burden' or poorer mental health in these studies include
102 female gender (Kumar and Gupta 2014, Mandowara et al. 2020, Madavanakadu et al. 2021),
103 social isolation (Jagannathan et al. 2014, Bapat and Shankar 2021), economic disadvantage
104 (Bapat and Shankar 2021, Madavanakadu et al. 2021), fewer years of education
105 (Jagannathan et al. 2014, Mandowara et al. 2020, Bapat and Shankar 2021, Menon et al.
106 2022), and higher care-needs (Brinda et al. 2014, Mandowara et al. 2020). Finally, societal
107 stigma operates towards caregivers of people with particular disabilities such as epilepsy
108 (Bapat and Shankar 2021) and psychosocial disability (Mathias et al. 2015, Singh et al. 2016,
109 Mathias et al. 2019, Dijkxhoorn et al. 2022), as well as towards the people they provide care
110 for.

111 Although existing literature provides a strong rationale to intervene to address caregiver
112 mental health in India, little evidence exists on how this should be done. Studies from high
113 income settings generally support the short-term effectiveness of non-pharmacologic
114 interventions for improving wellbeing and mental health of caregivers (Yesufu-Udechuku et
115 al. 2015, Gabriel et al. 2020, Teahan et al. 2020, Lambert et al. 2021, Wiegelmann et al.
116 2021), including in group settings (Sörensen et al. 2002, Cheng and Zhang 2020, Hovadick et
117 al. 2021, McLoughlin 2022). However, these studies are of variable quality, and methods for
118 reporting interventions and assessing effectiveness are heterogenous. Evidence from low-
119 and middle-income countries (LMICs) is relatively scarce (Hinton et al. 2019, Gabriel et al.
120 2020). Within India, a variety of interventions have been trialled at small scale and with
121 mixed results (Das et al. 2006, Dias et al. 2008, Kulhara et al. 2009, Chakraborty et al. 2014,
122 Chatterjee et al. 2014, Lamech et al. 2020, Baruah et al. 2021, Singh et al. 2021, Sims et al.
123 2022, Stoner et al. 2022).

124 In this context, community-based group interventions offer several potential advantages.
125 Community settings may be more accessible and acceptable than healthcare facilities,
126 (Kohrt et al. 2018) and have been advocated as a specific low-resource strategy (Stanley et
127 al. 2017). Groups also provide mechanisms for strengthening social and peer support
128 (Hoddinott et al. 2010, Gailits et al. 2019, Morrison et al. 2019). On the other hand, group
129 interventions may exacerbate existing inequalities with more educated participants
130 engaging more effectively (Hoddinott et al. 2010). In India, several group interventions for
131 caregivers have been implemented with reasonable feasibility and acceptability (Lamech et
132 al. 2020, Sims et al. 2022, Stoner et al. 2022), although evidence for effectiveness is limited
133 (Malini 2015). There is an urgent need for cost-effective, equitable, and sustainable
134 interventions to strengthen caregiver mental health in LMICs.

135 *Nae Umeed* is a community-based group intervention that aims to improve mental health
136 and social inclusion amongst disadvantaged caregivers of people with disability. The aim of
137 this study is to assess the effectiveness of *Nae Umeed* in improving mental health and social
138 participation among participants in Dehradun, Uttarakhand, India in 2020-21, and to explore
139 how effectiveness varies with socio-demographic identity.

140 Methods

141 Intervention

142 *Nae Umeed* was developed by *Burans*, a community-based partnership project administered
143 by Herbertpur Christian Hospital seeking to improve mental health in communities of
144 Uttarakhand (Burans 2022). *Nae Umeed* was informed by previous research identifying
145 women caregivers of people with disability as at high risk of social exclusion and strain
146 (Mathias et al. 2019). It aims to build skills and knowledge in self-care, caregiving,
147 psychosocial wellbeing, behaviour management, accessing support and entitlements, and
148 management of household finances. The curriculum was developed collaboratively by
149 community health workers, public health practitioners, and mental health practitioners
150 working in Uttarakhand in 2017. *Nae Umeed* was piloted with 15 groups of caregivers in
151 2019 and in response to feedback, additional content on household budget management
152 and access to government entitlements were added.

153 In this study, *Nae Umeed* was delivered in a series of 14 group sessions, with five to seven
154 participants per group. One-hour sessions were delivered weekly using a structured
155 curriculum that covered topics linked to managing mental distress (modules 1-9) as well as
156 managing household finances (modules 10 – 14). (Parinaam Foundation 2014, Emmanuel
157 Hospital Association 2019). Recognising that most participants were not caregivers,
158 facilitators adapted intervention content by providing examples that linked to experiences
159 of psychosocial distress more broadly. Table 1 outlines the topics covered by the *Nae*
160 *Umeed* module and they can be seen as relevant for people with mental distress.
161 Participants were allocated into groups from their local community. Venues were chosen to
162 maximise physical distancing and privacy. Sessions tools included visual aids from the
163 manuals, whole group or small group discussions, role play activities, group teambuilding
164 activities, and group revision quizzes. Several modules included short homework
165 assignments, for example discussing an aspect of the session content with family members.
166 Over the course of the intervention participants were provided with several pamphlets
167 related to the sessions, for example on self-care. The pamphlets on self-care were illustrated
168 and the content was discussed with practical examples to cater for all levels of literacy.

169 Sessions were facilitated by nine community health workers, who facilitated two groups
170 each (yielding a total of 18 groups), and also supported recruitment. Facilitators were
171 trained to deliver *Nae Umeed* using a participatory facilitation style. Trainers were *Burans*
172 project officers who had a minimum of five years working in community development and
173 were qualified with a Masters in Social Work. Due to the COVID-19 pandemic, facilitator
174 training was provided online and supplemented with interactive discussions on each module
175 using Whatsapp, as well as face-to-face meetings where possible.

176 Facilitators referred illness-specific queries about how to manage people with disability to
177 the health professionals leading a disability programme at Herbertpur Christian Hospital,
178 which hosted the implementation of Nae Umeed.

179 Study design

180 The study design was an uncontrolled pre-post (before-after) study.

181 Participants and setting

182 Given the real-world setting of this trial with high rates of mental distress post-lockdown,
183 we elected to invite as many participants as community facilitators could accommodate in
184 groups. Pragmatically they proposed they could manage up to a maximum of 18 groups with
185 a maximum of 7 members per group, thus we invited a total of 126 people to participate in
186 the intervention.

187 This intervention study was implemented in August to November 2020, when India was
188 emerging from India's harsh 12-week lockdown in the first year of the COVID-19 pandemic.
189 There was widespread anxiety and reduced freedom of movement for most people. The
190 setting was the urban and semi-urban slum areas of Dehradun. Burans staff invited
191 individuals to participate in *Nae Umeed* through existing project networks involving people
192 with disability and their household members. To be considered eligible to take part in the
193 study individuals had to be at least 18 years old, plan to reside in the area for the following
194 15 weeks and either be a caregiver or household member of a person with disability or
195 identify themselves as experiencing significant psychosocial stress. In a setting with limited
196 access to health care or social support for disability or mental health care, we used inclusive
197 criteria and disability referred to any household member who had impaired function or
198 ability to carry out activities of daily living. People with disabilities represented included
199 people with sensory deficits, locomotor challenges as well as psychosocial disability,
200 although the majority of participants would not have had a formal mental health related
201 diagnosis or be receiving formal support or treatment (Mathias et al. 2015). There was no
202 requirement regarding duration of caregiving or caregiving role (i.e. primary caregiver or
203 other). Although the intervention was designed for caregivers, parameters for participation
204 included other community members with mental distress to increase opportunities for
205 social support (Gailits et al. 2019, Morrison et al. 2019) and reduce labelling and stigma of
206 group members (Mathias et al. 2015, Mathias et al. 2019). In instances where participants
207 included caregivers and people with disability from the same household or family, they
208 participated in different groups. Recruitment was performed by Burans staff.

209 Consistent with the ethics approval, informed verbal consent was obtained and
210 documented on forms by health workers who observed and signed that they had witnessed
211 the consent process in line with recommended processes for meaningful informed consent
212 (Bhutta 2004).

213 Outcomes

214 The primary outcomes were the Patient Health Questionnaire-9 (PHQ-9) which indicates risk
215 of depression, and the short General Health Questionnaire (GHQ-12) which measures
216 mental distress. The PHQ-9 has been validated in diverse settings in India and shown stable
217 performance across demographic subgroups and time (De Man et al. 2021). The GHQ-12 has
218 been widely validated as a screening instrument for depression, including in India, and has
219 been found to be robust across gender, age, and educational level (Goldberg et al. 1997).
220 The secondary outcome was change in score on the Participation Scale (P-scale) (van Brakel
221 et al. 2006), which was designed to measure client-perceived social participation and
222 developed and validated in South Asia.

223 Data collection

224 Pre-intervention data were collected in the two weeks before starting the intervention.
225 Post-intervention data were collected 3-4 months later, within three weeks of completion of
226 the intervention. Demographic variables were recorded at both pre- and post-intervention
227 outcome assessments. Data collection was performed by three Burans project officers (who
228 were not involved as group facilitators), who recorded participants' verbal responses to
229 questions. Data were checked by team leaders, and queries or inconsistencies clarified with
230 team members or participants where necessary.

231 Statistical analysis

232 Data analysis was performed using R version 4.1.2 (R Core Team 2021). Participant ages
233 were summarised as a median and range, and categorical demographic variables as counts
234 and sample proportions. Participant demographic data recorded at the pre-intervention
235 assessment were used for all analyses, except when this data was missing, in which case
236 data recorded at the post-intervention assessment were used if available. Primary and
237 secondary outcomes were assessed as mean score change among participants who
238 completed both pre- and post-intervention assessments. Score change distributions for each
239 outcome were visually inspected for normality using Q-Q plots. Confidence intervals (CIs)
240 and p-values for paired two-sided t-tests were calculated using the *t.test* function. Due to
241 higher than anticipated enrolment of non-caregivers, a post-hoc subgroup analysis of both
242 primary and secondary outcomes by caregiver status (caregiver or non-caregiver) was
243 performed to specifically investigate change amongst caregivers. As a further exploratory
244 analysis, multivariable linear regression models were fit to change in each outcome score,
245 including pre-intervention score and all demographic variables as predictors. Statistical
246 significance was assessed at a threshold of $p = 0.05$ without adjustment for multiple
247 comparisons.

248 Trial registration

249 The study protocol was retrospectively registered with the Australia New Zealand Clinical
250 Trials Registry (registration number: ACTRN12623000047695).

251 Results

252 Recruitment was completed in early-to-mid August 2020. Overall, 124 people agreed to take
253 part in the intervention. Eight subsequently left due either to migration or conflicting
254 employment commitments. The remaining 116 were recruited as study participants and
255 completed pre-intervention data collection (Figure 1). Data from the 115 participants who
256 completed follow-up in late November and early December 2020 were analysed.

257 The median age of participants was 35 years, 106 (92%) were female, and 71 (62%) reported
258 having completed no formal education (Table 2). There were 23 (20%) participants
259 identifying as caregivers, 75 (65%) people with disability, and 17 (15%) others (comprising
260 other vulnerable community members identified by Burans staff including members of
261 gender-based violence support groups).

262 Pre- and post-intervention outcome scores are summarised in Table 3. Significant mean
263 improvements between the pre- and post- assessments were observed for both primary
264 outcomes (PHQ-9: 5.7 points (95% CI: 4.6 - 6.7), GHQ-12: 7.5 points (95% CI: 6.1 - 8.8)), as
265 well as for the secondary outcome of social participation (P-scale: 9.8 points (95% CI: 7.3 -
266 12.3)). In subgroup analyses, statistically significant improvements were observed for both
267 caregiver and non-caregiver groups.

268 In the multivariable linear regression models, worse (higher) pre-intervention scores were
269 strongly associated with larger improvements in all outcomes (Table 4), meaning those with
270 more room to benefit, improved more. Widowed or separated participant marital status
271 (compared with married) were associated with significantly less improvement of the GHQ-
272 12 but not on other measures. No consistent effects were detected across other predictor
273 variables.

274 Discussion

275 Over the period of this study *Nae Umeed* participants self-reported improved general
276 wellbeing, greater social participation and fewer depressive symptoms using validated
277 psychometric scales. Improvements were noted irrespective of caregiver status. Participants
278 from vulnerable or marginalised groups such as women, people of disadvantaged caste, and
279 people with lower levels of education were well represented in the intervention, and there
280 was no strong evidence suggesting these socio-demographic markers of disadvantage
281 limited their capacity for benefit.

282 These findings are broadly consistent with the limited existing evidence for effectiveness of
283 community health worker delivered interventions in LMICs for mental health care and
284 prevention (Purgato et al. 2021, van Ginneken et al. 2021). Specific evidence for
285 effectiveness of group caregiver interventions exists for high-income settings (Sörensen et
286 al. 2002, Cheng and Zhang 2020, Hovadick et al. 2021, McLoughlin 2022), but is limited in
287 the South Asian context. Studies of group interventions for family caregivers of persons with
288 schizophrenia (Sims et al. 2022) and dementia (Lamech et al. 2020, Stoner et al. 2022) in
289 India have been described but did not include measures of effectiveness. In the only
290 published study (to our knowledge) quantitatively assessing effectiveness of a group
291 caregiver intervention in India, a support group intervention was associated with increased
292 family system strength scores in rural caregivers of stroke patients (Malini 2015).

293 Other interventions to improve caregiver wellbeing in India have had mixed success. Facility-
294 based educational interventions, predominantly for caregivers of people with psychosocial
295 disability, have some evidence for effectiveness (Das et al. 2006, Kulhara et al. 2009,
296 Chakraborty et al. 2014, Singh et al. 2021). A home-care support intervention was
297 associated with improvement in mental health of caregivers of people with dementia in a
298 randomised controlled trial (RCT) in Goa (Dias et al. 2008). In another RCT, a
299 multicomponent community care intervention had no significant effects on ‘burden’
300 reported by caregivers of people with schizophrenia (Chatterjee et al. 2014). An attempt to
301 trial an online intervention for dementia caregivers suffered from low retention (Baruah et
302 al. 2021). The current study adds to limited evidence for community-based group
303 interventions LMICs, which may represent an efficient strategy to address mental health
304 disparities in resource-limited settings (Hinton et al. 2019).

305 In the current study, improvements were observed regardless of caregiver status,
306 suggesting that *Nae Umeed* may operate via mechanisms not specific to caregivers. In fact,
307 larger improvements were observed among non-caregivers than caregivers. This finding
308 may be explained by lower (better) pre-intervention outcome scores across outcome scales
309 amongst caregivers versus non-caregivers recruited to this study (leaving less room for
310 improvement), rather than reduced effectiveness due to caregiver status. This supposition is
311 supported by results of the multivariable analyses showing negligible effects of caregiver
312 status after adjustment for pre-intervention score and demographic variables. In North
313 India, people with poor mental health struggle with social exclusion, finances, and lack of
314 access to care (Mathias et al. 2015, Mathias et al. 2018). *Nae Umeed* includes content on
315 self-care, managing stress, psychoeducation, and financial literacy, as well as offering a
316 potential mechanism to strengthen social inclusion through peer support. These aspects of
317 the intervention may be of wider relevance to people dealing with mental health issues of a
318 family member, or their own. The mixed nature of groups in this study likely meant that
319 participation was less stigmatising for all participants, potentially contributing to positive
320 outcomes.

321 Several factors should be considered in trialling or implementing *Nae Umeed* or similar
322 interventions in other settings. *Nae Umeed* was designed for the setting of low-income
323 families in rural and urban Uttarakhand and may require some adaptations for other
324 contexts. For example, some aspects of the financial inclusion modules are specific to Indian
325 economic settings. Caregivers elsewhere will face different sets of issues that may warrant
326 different content or delivery. Piloting in new target settings will be necessary to inform
327 these adaptations. The organisational context should also be carefully considered. In this
328 study, *Nae Umeed* was implemented via a well-established platform with strong community
329 relationships. Facilitators were community health workers with ties to communities in which
330 they were working. These factors likely promoted recruitment and retention and possibly
331 effectiveness.

332 This study is strengthened by low drop-out and integration with an existing community
333 mental health project. The main limitation is the absence of a comparison group meaning
334 the attribution of outcome improvements to the intervention is not clear. The study
335 overlapped with a decline in India's first wave of COVID-19 and the easing of associated
336 public health restrictions, shifts which probably had independent positive effects on the
337 mental and social wellbeing of participants. Social desirability bias may have also
338 contributed to the positive outcomes at the follow-up assessment, particularly as outcomes
339 were solicited in-person by a community health worker. Recruiters may have focussed on
340 including those they felt were more likely to benefit from the intervention; the total number
341 of identified eligible individuals is not available. These biases could have led to
342 overestimation of the effectiveness of *Nae Umeed*. Outcomes were assessed within three
343 weeks after completion of the intervention, and a follow-up would be required to assess
344 how long these benefits were sustained.

345 Future research should focus on assessing sustained effects on caregiver mental health, as
346 well as exploring intervention mechanisms and implementation issues. A cluster RCT with
347 longer follow-up would provide a more confident estimate of intervention effectiveness.
348 The findings of this study highlight the current evidence gap and provide preliminary
349 evidence for effectiveness. Ongoing qualitative research will help tailor *Nae Umeed*, identify
350 optimal measurable outcomes for future studies, and explore barriers and facilitators to
351 implementation in the current setting.

352 Conclusions

353 Findings of this study are consistent with effectiveness of *Nae Umeed* in improving mental
354 health and social participation in caregiver and non-caregiver participants, however further
355 research is required to establish the degree to which improvements can be causally
356 attributed to the intervention. Nevertheless, the intervention was successful in reaching
357 marginalised target groups typically not well serviced by the traditional mental health care

358 system. Community-based group interventions are a promising but underexplored strategy
359 for addressing mental health disparities for vulnerable populations in South Asia.

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366 Author Contribution statement

367 CRB: Methodology, Formal analysis, Writing - Original Draft; PSP: Conceptualization,
368 Methodology, Investigation, Writing - Review & Editing, Project administration; AGS:
369 Investigation; JL: Formal analysis; NJG: Writing - Review & Editing, Supervision; KM:
370 Conceptualization, Methodology, Writing - Review & Editing, Supervision.

371 Financial Support

372 Research costs were covered by existing program funds.

373 Conflict of Interest statement

374 Conflicts of Interest: None.

375 Ethics statement

376 Approval for this project was provided by the institutional ethics committee of the
377 Emmanuel Hospital Association (protocol number: 240).

378 Data Availability statement

379 The data that support the findings of this study are available from the corresponding author
380 upon reasonable request. The complete data are not publicly available due to their
381 containing information that could compromise the privacy of research participants.

382

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581 Tables

582 **Table 1.** Summary of topics covered in the *Nae Umeed* group intervention by session.

Session	Topic summary
1.	Introduction to group and curriculum. Discussion of roles of caregivers.
2.	Mental illness: causes and symptoms.
3.	Importance of communication when caring for someone with mental illness.
4.	Techniques for behaviour modification.
5.	Medications: treatment plans, side effects.
6.	Effects of alcohol on health.
7.	Stress management techniques.
8.	Self-care.
9.	Recap session.
10.	Introduction to financial planning.
11.	Budgeting; tracking income and expenses.
12.	Strategies for saving money.
13.	Borrowing money safely.
14.	Recap of financial literacy session.

583

584 **Table 2.** Demographic characteristics of 115 study participants included in analysis by caregiver
 585 status (number of participants and percent of sample, unless otherwise specified).

	Non-caregivers (N=92)	Caregivers (N=23)	Overall (N=115)
Age (years)			
Median (range)	35 (18, 70)	35 (14, 60)	35 (14, 70)
Gender			
Male	6 (6.5%)	3 (13.0%)	9 (7.8%)
Female	86 (93.5%)	20 (87.0%)	106 (92.2%)
Marital status			
Married	71 (77.2%)	16 (69.6%)	87 (75.7%)
Widowed	12 (13.0%)	1 (4.3%)	13 (11.3%)
Separated	2 (2.2%)	0 (0%)	2 (1.7%)
Unmarried	7 (7.6%)	6 (26.1%)	13 (11.3%)
Caste			
General	35 (38.0%)	7 (30.4%)	42 (36.5%)
Other backwards class	22 (23.9%)	8 (34.8%)	30 (26.1%)
Scheduled caste/Scheduled tribe	21 (22.8%)	6 (26.1%)	27 (23.5%)
N/A	14 (15.2%)	2 (8.7%)	16 (13.9%)
Religion			
Hindu	57 (62.0%)	12 (52.2%)	69 (60.0%)
Muslim	34 (37.0%)	11 (47.8%)	45 (39.1%)
Sikh	1 (1.1%)	0 (0%)	1 (0.9%)
Years of education			
0	60 (65.2%)	11 (47.8%)	71 (61.7%)
1-5	12 (13.0%)	4 (17.4%)	16 (13.9%)
6-10	18 (19.6%)	5 (21.7%)	23 (20.0%)
>10	2 (2.2%)	3 (13.0%)	5 (4.3%)
Housing type*			
Kaccha	37 (40.2%)	5 (21.7%)	42 (36.5%)
Semi-pucca	22 (23.9%)	7 (30.4%)	29 (25.2%)
Pucca	33 (35.9%)	11 (47.8%)	44 (38.3%)
Household structure			
Joint family	15 (16.3%)	7 (30.4%)	22 (19.1%)
Nuclear family	77 (83.7%)	16 (69.6%)	93 (80.9%)

586 *Pucca: permanent houses constructed of conventional modern building materials; kaccha: semi-
 587 permanent houses made of mud, unfired bricks, grasses, and makeshift materials; semi-pucca: a
 588 combination.

589

590 **Table 3.** Participant outcome scores before and after participating in the *Nae Umeed*
 591 intervention, overall and by caregiver status.

Outcome	Mean score			
	Pre-intervention	Post-intervention	Mean difference (95% CI)	p-value
PHQ-9^a				
Overall	11.4	5.7	5.7 (4.6- 6.7)	<0.001
Caregivers	7.8	4.2	3.7 (2.1- 5.2)	<0.001
Non-caregivers	12.3	6.1	6.2 (4.9- 7.4)	<0.001
GHQ-12^b				
Overall	15.2	7.8	7.5 (6.1- 8.8)	<0.001
Caregivers	11.0	6.7	4.3 (2.7- 5.9)	<0.001
Non-caregivers	16.3	8.1	8.2 (6.6- 9.8)	<0.001
P-scale^c				
Overall	15.2	5.3	9.8 (7.3-12.3)	<0.001
Caregivers	11.1	4.2	7.0 (1.7-12.2)	0.012
Non-caregivers	16.2	5.6	10.6 (7.7-13.4)	<0.001

^a Patient Health Questionnaire-9

^b Short General Health Questionnaire

^c Participation Scale

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593

594 **Table 4.** Linear regression coefficients for the mutually adjusted effects of participant
 595 sociodemographic variables on a standard deviation improvement in outcome score.

Characteristic	Improvement on PHQ-9 ^a			Improvement on GHQ-12 ^b			Improvement on P-scale ^c		
	Beta	95% CI ^d	p-value	Beta	95% CI	p-value	Beta	95% CI	p-value
Baseline score	0.77	0.65, 0.89	<0.001	0.82	0.71, 0.93	<0.001	0.88	0.78, 1.0	<0.001
Age (years)	-0.01	-0.02, 0.01	0.3	0.01	-0.01, 0.02	0.4	-0.01	-0.02, 0.00	0.2
Gender									
Male									
Female	-0.08	-0.56, 0.41	0.8	0.24	-0.16, 0.65	0.2	0.24	-0.15, 0.62	0.2
Marital status									
Married									
Widowed	-0.16	-0.55, 0.24	0.4	-0.52	-0.85, -0.19	0.003	-0.01	-0.33, 0.31	>0.9
Separated	-0.49	-1.4, 0.39	0.3	-1.0	-1.7, -0.26	0.010	0.48	-0.22, 1.2	0.2
Unmarried	0.14	-0.34, 0.62	0.6	0.16	-0.24, 0.56	0.4	-0.30	-0.67, 0.08	0.13
Caste									
General									
Other backwards class	-0.15	-0.51, 0.21	0.4	0.65	0.35, 1.0	<0.001	0.19	-0.09, 0.48	0.2
Scheduled caste/Scheduled tribe	0.00	-0.32, 0.31	>0.9	0.18	-0.08, 0.45	0.2	0.19	-0.06, 0.43	0.14
N/A	-1.0	-1.3, -0.60	<0.001	-0.23	-0.54, 0.07	0.14	-0.01	-0.30, 0.28	>0.9
Religion									
Hindu									
Muslim	-0.10	-0.43, 0.24	0.6	-0.20	-0.48, 0.09	0.2	0.08	-0.19, 0.34	0.6
Sikh	1.0	-0.23, 2.2	0.12	0.78	-0.22, 1.8	0.13	0.34	-0.59, 1.3	0.5
Years of education									
0									

Characteristic	Improvement on PHQ-9 ^a			Improvement on GHQ-12 ^b			Improvement on P-scale ^c		
	Beta	95% CI ^d	p-value	Beta	95% CI	p-value	Beta	95% CI	p-value
1-5	-0.11	-0.46, 0.24	0.5	0.07	-0.22, 0.36	0.6	-0.07	-0.34, 0.20	0.6
6-10	-0.14	-0.44, 0.17	0.4	0.07	-0.19, 0.32	0.6	0.09	-0.16, 0.33	0.5
>10	-0.04	-0.66, 0.58	0.9	0.21	-0.31, 0.73	0.4	0.22	-0.27, 0.70	0.4
Housing type ^e									
Kaccha									
Semi-pucca	-0.01	-0.32, 0.29	>0.9	-0.07	-0.32, 0.19	0.6	-0.01	-0.25, 0.23	>0.9
Pucca	0.05	-0.25, 0.35	0.7	0.28	0.03, 0.54	0.032	0.05	-0.18, 0.29	0.7
Household structure									
Joint family									
Nuclear family	0.24	-0.07, 0.54	0.13	0.17	-0.09, 0.42	0.2	-0.13	-0.37, 0.11	0.3
Participant type									
Non-caregivers									
Caregivers	0.05	-0.25, 0.35	0.7	-0.11	-0.36, 0.14	0.4	0.00	-0.23, 0.22	>0.9

^a Patient Health Questionnaire-9

^b Short General Health Questionnaire

^c Participation Scale

^d CI = Confidence Interval

^e Pucca: permanent houses constructed of conventional modern building materials; kaccha: semi-permanent houses made of mud, unfired bricks, grasses, and makeshift materials; semi-pucca: a combination.

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598 Figures

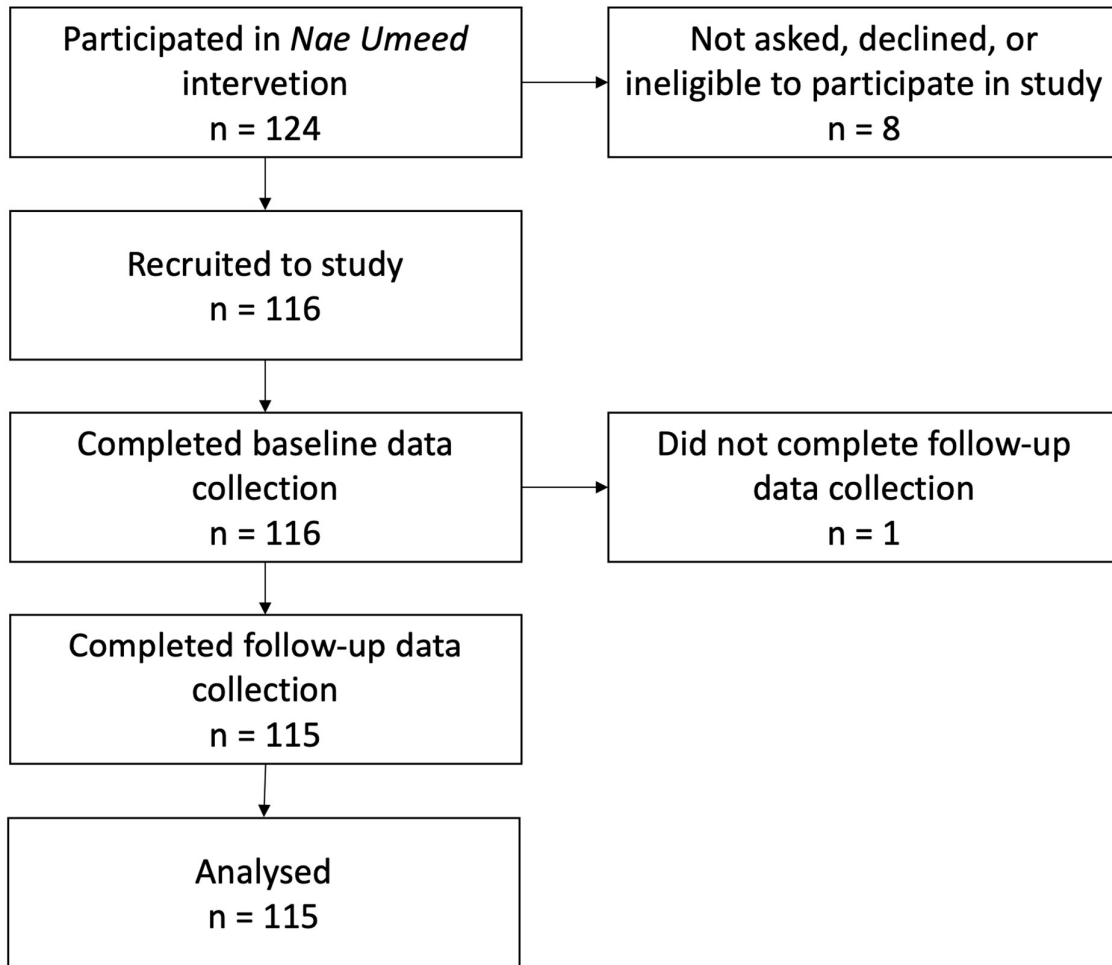
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Figure 1. Flowchart showing eligibility, recruitment, follow-up, and inclusion in analysis.