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2 **RUNNING HEAD: PEER SUPERVISION IN A PEER-DELIVERED INTERVENTION**  
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9 **Peer supervision for assuring the quality of non-specialist provider delivered psychological**  
10 **intervention: Lessons from a trial for perinatal depression in Goa, India**  
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## ABSTRACT

**Background.** The aims of the current study were three-fold: i) to estimate the reliability and predictive validity of a therapy quality measure for use by peers; ii) to assess the extent to which peer delivery agents could be trained to evaluate their peers' counsellors as reliably as experts; and iii) to identify barriers and facilitators of several implemented models of peer supervision.

**Methods.** 26 peers (called 'Sakhis' in the study context), with no previous experience or formal training in mental health care delivery, were trained by experts to deliver the Thinking Healthy Program Peer-delivered (THPP) and conduct peer-led supervision. Using the Therapy Quality Scale (TQS)—an 18 item Likert scale (0-2) measuring both general and treatment-specific skills—both peers and experts independently rated 167 individual sessions to estimate: a) the psychometric properties of TQS; and b) the mean difference between peer and expert TQS ratings; these data were analyzed using SAS 9.3. This was complemented with qualitative data (two rounds of in-depth interviews with four experts and focus group discussions with all Sakhis) which were analyzed using framework analysis.

**Results.** We observed good internal consistency on TQS ratings among expert ( $\alpha=0.814$ ) and Sakhis ( $\alpha=0.843$ ) and good to excellent scores of inter-rater reliability among experts (ICC=0.779) and Sakhis (ICC=0.714). TQS ratings were not significantly related to patient depressive symptoms at 6-months post-child birth but were significantly related to patient activation scores ( $r=0.375$ ,  $p<0.01$  for treatment-specific skills and  $0.313$ ,  $p<0.01$  for general skills) at 3-months post-child birth, which in turn were significantly related to depressive symptom scores at 6-months post-child birth ( $r=-0.455$ ,  $p<0.001$ ), highlighting a potential temporal pathway between therapy quality, patient behaviours and patient outcomes. Following additional training and with growing expertise, Sakhis eventually evaluated their peers' counselling sessions as reliably as experts—demonstrating no significant mean differences on general ( $t=-0.42$ ,  $p>0.05$ ) or treatment-specific ( $t=-1.44$ ,  $p>0.05$ ) subscale scores. Qualitative findings were also consistent between experts and Sakhis: barriers included peers' initial difficulties in rating the TQS and leading supervision which declined over time. Most Sakhis and experts reported the benefits of using a structured scale to rate therapy quality which in turn facilitated consistent and relevant feedback and motivation to ultimately improve Sakhis' counselling skills. In addition, most Sakhis and experts found that peer supervision methods were acceptable and feasible, particularly when linked to financial incentives and expert supervisor.

**Conclusion.** With time, non-specialist or lay providers can be trained to implement peer supervision and assess therapy quality as reliably as experts using a psychometrically-sound measure. However, peer supervision with experts was more preferred than peer supervision without experts to facilitate structured, reliable feedback. Additional studies are required to address this challenge and test solutions to facilitate the dissemination of non-specialist delivered psychosocial interventions at a global level.

**Keywords.** therapy quality, depression, behavioral activation, non-specialist providers, peer supervision

## INTRODUCTION

76  
77 Worldwide, robust evidence exists to demonstrate the effectiveness of psychological  
78 treatments delivered by non-specialist providers (NSPs; Hoefft, Fortney, Patel, & Unützer, 2016;  
79 Singla et al., 2017). Despite their effectiveness, psychological treatments are poorly  
80 disseminated. This is partly due to the limited number of available mental health professionals  
81 who can train novice clinicians with high fidelity (Herschell, Kolko, Baumann, & Davis, 2010;  
82 Kazdin, 2017) and the way in which they are supervised (Fairburn & Patel, 2017). Supervision is  
83 considered a key pedagogical and quality assurance tool in treatment delivery, and known to  
84 influence the therapist in training (Saxon, Barkham, Foster, & Parry, 2016; Saxon, Firth, &  
85 Barkham, 2016), the therapeutic process (Ladany, Ellis, & Friedlander, 1999) and patient  
86 outcomes (Fairburn & Cooper, 2011; Watkins Jr, 2011). However, supervision typically involves  
87 practicing the treatment under the direction of someone experienced in delivering that  
88 treatment (Herschell et al., 2010). This is also the case in non-specialist delivered interventions  
89 which, while effective (Singla et al., 2017; Van Ginneken et al., 2013), rely on experts—typically  
90 a mental health professional—to train and supervise NSPs.

91  
92 This bottleneck could be potentially addressed by the task-sharing of supervision to peers,  
93 while using standardized tools with robust psychometric properties. For example, a recent  
94 study from India found that lay counsellors were able to assess therapy quality as reliably as  
95 expert supervisors for psychological treatments for depression and harmful drinking (Singla et  
96 al., 2014). Furthermore, this peer supervision model was found to be both acceptable and  
97 feasible by lay counsellors. Peer supervision may also be advantageous because it encourages  
98 therapists in training to draw upon others' experiences (Golia & McGovern, 2013) and take  
99 active roles in assisting one another including the alleviation of stress, anxiety and feelings of  
100 anxiety (Yeh et al., 2008). In Uganda, structured peer supervision using checklists to monitor  
101 one's session delivery was perceived as advantageous by both trainee and supervisors because  
102 it offered concrete feedback to the delivering therapist (Singla & Kumbakumba, 2015). It  
103 remains unclear, however, whether these and other examples of measurement-based peer  
104 supervision within a task-sharing context can successfully continue without an expert present.

105  
106 The current study examined the acceptability, feasibility and accuracy of measurement-based  
107 peer supervision in the SHARE—the South Asian Hub for Advocacy, Research and Education on  
108 Mental Health—trial in India (Fuhr et al., 2019). The goal of the trial was to adapt the Thinking  
109 Healthy Program (THP; Rahman, Malik, Sikander, Roberts, & Creed, 2008), a psychological  
110 treatment for perinatal depression, for delivery by peers (called the Thinking Healthy Program,  
111 Peer-Delivered or THPP). The THP was originally developed and evaluated in Pakistan (Rahman  
112 et al., 2008) and is recommended by the World Health Organization for the treatment of  
113 perinatal depression in low-resource settings ([http://www.who.int/mental\\_health/maternal-  
114 child/thinking\\_healthy/en/](http://www.who.int/mental_health/maternal-child/thinking_healthy/en/)). Peers—referred to “*Sakhis*” (meaning ‘friend’) were mothers living  
115 in the same or neighbouring community as mothers participating in the intervention. THPP in  
116 Goa, India (hereafter referred to as THPP-India; Sikander et al., 2015) trial found THPP to be  
117 more effective and cost-effective than enhanced usual care alone. Peers were also found to be  
118 an acceptable and feasible delivery agent (Singla et al., 2014).

119 To our knowledge, few studies have systematically evaluated the process and reliability of peer-  
 120 supervision, in particular in the context of task-sharing for mental health care. In addition, no  
 121 study to our knowledge has examined the acceptability and feasibility of peer supervision with  
 122 and without an expert present in a task-sharing context. We developed a tool for this purpose  
 123 called the Therapy Quality Scale (TQS) and used this to rate the quality of therapy sessions. The  
 124 aims of the study reported in this paper were:

- 125 1) To describe the psychometric properties of the Therapy Quality Scale, including its reliability  
 126 (internal consistency, test re-test and inter-rater reliability) and validity (predictive validity  
 127 in relation to patient activation at 3-months post-child birth and patient outcomes at 6-  
 128 months post-childbirth).
- 129 2) To examine the accuracy of peer ratings as compared to expert supervisors, i.e., the extent  
 130 to which Sakhis could be trained to evaluate their peers' counselling as reliably as experts
- 131 3) To identify the perceived barriers and facilitators among Sakhis and their supervisors  
 132 related to the implementation of peer supervision, including the use of measurement-based  
 133 peer supervision and comparing peer supervision with and without experts present.

134

135

## METHODS

136 **Setting.** The study was nested in a randomized controlled trial conducted in North District of  
 137 the state of Goa, India. The trial involved a sample of 280 pregnant women, aged  $\geq 18$  years  
 138 with moderate to severe depressive symptoms, as defined by a PHQ-9 score  $\geq 10$ .

139

140 **Participants.** Three types of participants were included in the study:

141 *Sakhis.* Peers were mothers belonging to the same or neighbouring communities as the  
 142 trial participants with depression. These were women with children who had, a similar socio-  
 143 demographic background as participants, and good communication skills (Singla et al., 2014).  
 144 These peers were recruited through *anganwadis* (village-based child development centers),  
 145 advertisements in newspapers, or by word of mouth. Following the findings from our formative  
 146 research,<sup>15</sup> selection criteria included being a mother (preferably with their youngest child over  
 147 3 years), an interest in helping other mothers in their community, good communication skills, a  
 148 minimum seventh grade education and a commitment of one day per week. 55 peers were  
 149 invited for interview, 37 peers were invited to training, and 26 peers entered and remained in  
 150 the trial (see **Figure 1**). Here, competency assessment refers to Sakhis participation in  
 151 standardized role plays to assess their skills following the attendance of a training workshop.  
 152 Their mean age was 37.85 years (range 27 to 50 years), mean education was 11.85 years (range  
 153 from 9 to 15 years) and they had about two children (range 1 to 3).

154

155

## [INSERT FIGURE 1]

156

157 *Experts.* Experts included four mental health professionals with a Master's degree or  
 158 diploma in clinical psychology with up to 5 years of experience. In total, there were six expert  
 159 supervisors over the course of the trial and two at any given period. In addition, two lay  
 160 counsellors with several years of experience in delivering psychological treatments for  
 161 depression (Patel et al., 2017; Weobong et al., 2017) were recruited and trained as experts for  
 162 the current study.

163

164 *Participants.* Study participants included pregnant women, aged  $\geq 18$  years with  
 165 moderate to severe depressive symptoms, as defined by a Patient Health Questionnaire-9  
 166 (PHQ-9) score  $\geq 10$  (Spitzer, Kroenke, Williams, & Group, 1999). Potentially eligible participants  
 167 were screened for depression with a locally-validated version of the PHQ-9 (Patel et al., 2008)  
 168 after providing written informed consent for screening (or witnessed informed consent/audio-  
 169 recordings for illiterate participants). Participants were recruited from routine healthcare  
 170 settings including two antenatal clinics and two primary health centers in Goa. Data from only  
 171 those participants who were randomized to the intervention arm were selected for the current  
 172 study. The trial protocols and results been described in full elsewhere (Fuhr et al., 2019;  
 173 Sikander et al., 2015). The larger trial was registered on ClinicalTrials.gov (NCT02104232 in  
 174 THPP-India).

175

## 176 **Procedures**

177 *Thinking Healthy Program Peer-delivered.* THPP is the adapted (peer-delivered) version  
 178 of the Thinking Healthy Program (THP) which was originally developed and evaluated (based on  
 179 delivery by government-employed LHWs) for perinatal women with moderate to severe  
 180 depressive symptoms in Pakistan (Rahman et al., 2008).

181 THPP comprised up to 14 sessions over the perinatal period (antenatal and postnatal),  
 182 each lasting up to 45 minutes. The intervention included four treatment phases: 1) the prenatal  
 183 phase, in which the intervention was delivered during the second or third trimester of  
 184 pregnancy in up to six sessions; 2) early infancy, in which the intervention was delivering during  
 185 the first two months after childbirth in up to four sessions; middle infancy which occurred 3-4  
 186 months after childbirth over two sessions; and finally 4) late infancy, which occurred 5-6  
 187 months after childbirth over two sessions Treatment development and adaptation has been  
 188 further described elsewhere (Rahman, 2007).

189 The core strategies used by the peers were both treatment-specific (behavioral  
 190 activation, identifying, monitoring and replacing unhealthy behaviours with healthy ones and  
 191 practicing them) as well as general (active listening, collaboration with the family, guided  
 192 discovery using pictures and stories, homework; Atif et al., 2017). The treatment was  
 193 implemented primarily in participants' homes and focused on three areas: personal well-being,  
 194 relationship with the infant and relationship with significant others.

195

196 *Training and supervision.* Peers were trained in the THPP content, delivery, and therapy  
 197 quality scales during the pilot phase of the trial (Aug – Dec 2013). Training included reviewing  
 198 and practicing skills specific to antenatal and postnatal treatment phases as well as common  
 199 treatment skills, such as taking a befriending stance, sharing one's own experiences as a  
 200 mother, and building a good relationship with the mother and her family. The primary  
 201 pedagogical tools were demonstrations, discussion and role plays. Following the training  
 202 workshop, all Sakhis participated in a competency assessment whereby they engaged in a brief,  
 203 ten to fifteen-minute standardized role play to demonstrate their skills. Independent raters  
 204 evaluated Sakhis' performance on these role plays and Sakhis were selected for the trial based  
 205 on their performance.

206 Upon completion of training and competency assessments, peers were assigned a  
 207 caseload to practice the THPP programme and attended group supervision. Group supervision  
 208 involved the assessment of therapy quality and followed the methods used in the PREMIUM  
 209 trials (Singla et al., 2014) which were perceived as highly acceptable by lay health care workers.  
 210 This involved listening to the individual audio-recorded counselling session in groups of 2 to 4  
 211 peers, followed by each peer rating the session using the Therapy Quality Scale (described  
 212 below), and then discussing their ratings in detail among peers. During the pilot phase,  
 213 supervision was led by the experts who had also trained peers on the THPP intervention.

214 During the trial itself, peer-led supervision was implemented with experts present in  
 215 some sessions (but not leading the discussion). During the trial, two types of monthly group  
 216 supervision (2-4 peers in each group) were encouraged: peer supervision with an expert  
 217 present who helped to facilitate supervision and peer supervision without an expert present  
 218 which were also referred to by the intervention team as ‘mini meetings’; Golia & McGovern,  
 219 2013). During group supervision with experts, one audio-recorded session was independently  
 220 rated by the provider who delivered the session, the peers, and the expert. Up to three-fourths  
 221 of treatment sessions were audio-recorded; these audio recordings were randomly selected by  
 222 an expert or the data coordinator and stratified by audio quality, phase and delivery agent.  
 223 During group supervision without experts, Sakhis were placed into groups of 2-4 and asked to  
 224 meet monthly to discuss treatment cases.

225

#### 226 **Measures and Data Collection.**

227 The **Therapy Quality Scale** (TQS; Supplementary Figure 1) was developed and used for the  
 228 assessment of individual sessions. The TQS is an 18-item scale that consists of two separate  
 229 subscales: *Treatment Specific Skills* (TSS) measuring skills that are based on the THPP treatment  
 230 modality (e.g., reviews previous session, assigns homework, involves family members); and  
 231 *Treatment Approach Skills* (TAS) which assesses common factors that the counsellor may use in  
 232 any psychotherapeutic intervention (e.g., using active listening, appropriate language and a  
 233 collaborative approach). This scale was based on a 20-item therapy quality scale for the Healthy  
 234 Activity Program (HAP), a culturally-adapted behavioral activation treatment delivered by lay  
 235 health workers in primary healthcare centers in the study setting (Patel et al., 2017); it was  
 236 found to have good psychometric properties of reliability (Singla et al., 2014). Adaptations to  
 237 the SHARE TQS included treatment-specific skills related to THPP and each rating point being  
 238 defined on the scale itself to enhance reliability by peers who would be expected to have less  
 239 structured training and supervision. Each item is rated on a Likert scale (0 ‘not done’, 1 ‘partially  
 240 done’ or 2 ‘done well’). The score of each subscale was calculated as an average score of 2.

241 *Patient Activation Scores.* The PREMIUM Abbreviated Activation Scale (PAAS) is a 5-item  
 242 scale, originally developed and used in the HAP trial (Weobong et al., 2017). It includes five  
 243 indicators of behavioural activation — a treatment target in the THPP— such as the mother’s  
 244 self-report of her engagement with a variety of activities (“did you engage in many different  
 245 activities?” and “were you an active person and accomplished the goals you set out to do?”). All  
 246 five items are assessed on a scale of 0 (‘not at all’) to 5 (‘yes, completely’) for a total continuous  
 247 score of 25. In the larger effectiveness trial, the PAAS at 3 months showed good internal  
 248 consistency ( $\alpha=0.801$ ) and was found to mediate the effects of the THPP intervention on  
 249 depressive symptoms (Singla et al., 2019).

250 *Depression Outcome.* The depression outcome used to estimate the predictive validity  
 251 of therapy quality was depressive symptom severity scores on the Patient Health  
 252 Questionnaire-9 (PHQ-9) at 6-months post-childbirth, as assessed by independent evaluators  
 253 who were blind to allocation arm status. These data were recorded using tablets that were  
 254 uploaded in real-time to a server with data being reviewed by independent data managers.

255  
 256 *Qualitative Data.* Two rounds of interviews at the beginning and end of the trial were  
 257 conducted among all Sakhis and experts to examine their perspectives. Sakhis and experts  
 258 were each interviewed twice by a pair of independent interviewers. Focus group discussion  
 259 (FGDs) with Sakhis lasted up to 90 minutes, was conducted in September, 2015 in groups of 8 to  
 260 10. For the second round, in-depth interviews (IDIs) were conducted with Sakhis between  
 261 January and July, 2017. Similarly, IDIs were used to collect data at the with experts lasted up to  
 262 45 minutes each, were conducted individually and took place in in January- February, 2016 and  
 263 March-April, 2017.

264

#### 265 **Data Sources, Sample Sizes and Analyses.**

266 *Psychometric Properties of TQS.* We examined the psychometric properties of the TQS by  
 267 estimating its internal consistency, inter-rater reliability and test re-test reliability

268 Internal Consistency. Cronbach's alpha ( $\alpha$ ) was calculated to estimate the internal  
 269 consistency across items of the TQS. All available ratings of facilitated peer group supervision  
 270 sessions were used for these analyses, using the average peer rating of the same session  
 271 (N=167).

272 Inter-rater reliability. Random pairs of expert ratings (n=44) for the same counselling  
 273 session were selected. Because TQS is a continuous score, a one-way random effects analysis  
 274 was used to calculate the intra-class correlation (ICC) as an estimate of inter-rater reliability  
 275 between experts across the sessions (Cicchetti, 1994).

276 Test-retest reliability. Peers rated the same session twice (n=40): once at the time of the  
 277 supervision, and re-rate the same audiotaped session between 7 to 30 days later<sup>25</sup>. The final  
 278 sample size (N=40) provided 90% power ( $\alpha=0.05$ ) to detect a medium effect size on a Pearson  
 279 correlation of  $r=0.30$  (Cohen, 1988).

280 Predictive Validity. This analysis was restricted to mothers who have received at least  
 281 one session in each of the antenatal and postnatal phases and who have completed their 3  
 282 months outcome assessment (estimated  $n=40$  based on current enrollment and treatment  
 283 drop-out rates). One randomly selected antenatal and one randomly selected postnatal  
 284 counselling session tape will be rated by peers and the average rating used to derive a therapy  
 285 quality rating for that mother. The analyses estimated the correlation between this average  
 286 TQS rating and a) the PHQ-9 outcome score at 6 months, controlling for baseline severity of  
 287 depressive symptoms; and b) the PAAS patient behaviour score at 3-months post-child birth.  
 288 The final sample size (n=44) provided 90% power ( $\alpha=0.05$ ) to detect a small size on a Pearson  
 289 correlation of  $r=0.30$  (Cohen, 1988).

290

291 *Reliability, Acceptability and Feasibility of Peer Supervision.* Analyses related to reliability,  
 292 acceptability and feasibility were conducted at mid-line (February 2016) and endline (October  
 293 2016) of the trial. This was because we wanted to use midline results to better understand and

294 potentially improve existing methods related to supervision. To estimate the reliability of peer  
 295 ratings compared to expert ratings, the difference between the mean peer and expert TQS  
 296 ratings was compared using a paired t-test. Because expert ratings were required, only sessions  
 297 from facilitated peer supervision were used for these analyses.

298 Framework analysis (Ritchie, Spencer, & O'Connor, 2003) was used to analyze  
 299 qualitative data, according to barriers and facilitators related to supervision processes from  
 300 peers' and experts' perspectives. An iterative process was used to develop a coding tree. A  
 301 team of five, independent research assistants charted the transcribed and translated data with  
 302 high reliability ( $\kappa=0.90$ ) under supervision of two of the co-authors (DRS and RNK). Data  
 303 was first charted separately by timepoint (midline or endline) and stakeholder group (Sakhi or  
 304 expert), resulting in four charts. These data were triangulated to examine relevant subthemes  
 305 across and within timepoints and stakeholder groups. Data was then charted according to the  
 306 major themes of barriers and facilitators under the wider category of supervision followed by  
 307 the development of subthemes within the general category of barriers and facilitators (CR and  
 308 DRS). A final review of the qualitative coding was conducted by two of the co-authors (DRS  
 309 and CR).

310

311

## RESULTS

### 312 Psychometric properties of the Therapy Quality Scale

313 Overall, the TQS demonstrated excellent reliability and validity. The internal consistency of the  
 314 scale across all items was psychometrically sound for both treatment-specific skills ( $\alpha=0.801$ )  
 315 and general skills ( $\alpha=0.816$ ). ICC estimates between expert ratings of the same session showed  
 316 moderate inter-rater reliability on treatment-specific skills (ICC=0.707) and excellent inter-rater  
 317 reliability on general skills (ICC=0.904). Test-retest reliability of peer ratings on the same  
 318 session demonstrated a moderate correlation between time-points on both treatment-specific  
 319 skills ( $r=0.484$ ,  $p<0.01$ ) and general skills ( $r=0.501$ ,  $p<0.001$ ). Finally, the TQS was significantly  
 320 related to patient activation scores at 3-months post-child birth for both treatment-specific  
 321 skills ( $r=0.375$ ,  $p<0.01$ ) and general skills ( $r=0.313$ ,  $p<0.01$ ); the relations between TQS and  
 322 depressive symptoms scores was not significant. Patient activation scores were also  
 323 significantly related to patient depressive symptom scores at 6-months post-child birth  
 324 ( $r=-0.455$ ,  $p<0.001$ ).

325

### 326 Accuracy of Peer Ratings vs. Expert Ratings

327 In total, 167 ratings were used to assess the accuracy of peer ratings compared to expert  
 328 ratings during facilitated peer supervision sessions ( $n=92$  by midline and  $n=75$  by endline).  
 329 Across 26 Sakhis, 7.13 sessions (range 2.6 to 7.7) were rated for each counsellor; session  
 330 duration lasted an average of 38.48 minutes (95% CI=36.50 to 40.46 minutes) and half of the  
 331 sessions ( $n=86$  or 51.5%) were derived from the prenatal phase of treatment.

332 Mid-line assessments (February 2016) demonstrated significant differences between  
 333 average peer and expert ratings on both treatment-specific and therapeutic skills—  
 334 demonstrating that peers—on average—were not assessing individual audio sessions as reliably  
 335 as experts (see Figure 2a). This resulted in several, key modifications in supervision practices  
 336 including the introduction of refresher trainings (which involved extra group training by an  
 337 expert on the TQS to clarify each item), stopping and discussing audio-recording in chunks



338 rather than listening to the whole tape before conducting the rating; and the examination of  
 339 Sakhis' perspectives on specific items and their relationship to the overall THPP program. In  
 340 addition, two of the expert supervisors who previously served as lay counsellors in the HAP trial  
 341 shared their experiences and strategies in graduating from a lay person to a counsellor and  
 342 used the language of the Sakhis to ensure that they understood the core THPP constructs of  
 343 activation and peer support. Finally, individual feedback was provided to those Sakhis whose  
 344 scores were lower than the peer average for that item.

345 At the end of the trial (October 2017), the accuracy of peer ratings compared to experts  
 346 was again assessed. Paired t-tests demonstrated no significant difference on either treatment-  
 347 specific or general skills (Figure 2b), indicating that Sakhis had learned to accurately rate  
 348 sessions as reliably as experts.

349

### 350 [INSERT FIGURE 2A AND 2B]

351

### 352 **Acceptability and Feasibility of Peer Supervision among Peer Delivery Agents**

353 Qualitative findings were largely consistent between Sakhis and experts (see Table 1) with some  
 354 discrepancies. Perceived barriers and facilitators of peer supervision from both of these  
 355 perspectives and across the trial are discussed below.

356

357 **Barriers.** Initially, the majority of both Sakhis and supervisors reported difficulties with travel  
 358 due to a lack of compensation and a lack of time to attend meetings due to other  
 359 commitments, especially in supervision where experts were not present. These barriers  
 360 remained the most endorsed across the duration of the trial.

361

362 *"Mini Meetings [supervision without experts] are time consuming and also travel allowances*  
 363 *aren't paid to us and neither are expenses... We visit once in a month and plus we conduct mini*  
 364 *supervision ourselves so this is not productive for us."* (Sakhi\_23, Round 1)

365

366 *"Sakhis say that they don't have time—that is why they don't have [mini-meetings]. But we*  
 367 *encourage them to have these [mini-meetings] as they will benefit from it."* (Supervisor\_03,  
 368 Round 1)

369

370 Both experts and Sakhis reported that supervision without experts often lacked relevant  
 371 feedback, and that there was overall low motivation to attend these sessions. This remained  
 372 unchanged throughout the trial despite attempting to address challenges such as travel  
 373 allowances.

374

375 *"In absence of a supervisor, there is no control in our discussion also and we don't rate the*  
 376 *session. So I don't feel it benefits us but consumes time."* (Sakhi\_20, Round 1)

377

378 *"When there are difficulties that have been brought up again there was a chance that the peer*  
 379 *would give wrong feedback. Because there would be a wrong answer which couldn't be*  
 380 *corrected because we [Supervisors] weren't there."* (Supervisor\_02, Round 2)

381

382 Other key barriers reported by both stakeholder groups reflected peers' initial difficulties in  
 383 rating the TQS and leading supervision as well as being score a '0' to score individual items on  
 384 the TQS. Initially, Sakhis reported feeling demotivated when rated '0' on an item. By endline, a  
 385 number of barriers such as initial difficulties with TQS items, a lack of financial incentive,  
 386 competing demands and a low quality of feedback were less frequently mentioned.

387

388 *"At first, Sakhis didn't understand the rating scale. But then, we told them to read each item*  
 389 *and then we would discuss. [...] After reading, they understand the meaning. But at first, they*  
 390 *would fill in [the rating scale] because they have to do it without understanding."*

391 *(Supervisor\_01, Round 1)*

392

393 *"[...] After listening [to my recording] if all say that it was good then I feel very nice. If they rate*  
 394 *me 0, then I feel bad thinking that I worked hard and still I got rated 0."* (Sakhi\_17, Round 1)

395

396 **Facilitators.** The most commonly reported facilitators by Sakhis were the benefit of using a  
 397 structured scale to rate therapy quality that in turn facilitated consistent and relevant feedback  
 398 and fostered a greater understanding of Sakhis' challenges and skills. This was also endorsed by  
 399 all supervisors and across the duration of the trial.

400

401 *"[Structured supervision] has helped a lot. We understand and learn from our mistakes. We get*  
 402 *to know how we can deal with the problems...so there is improvement in our sessions."*

403 *(Sakhi\_20, Round 2)*

404

405 *"When we fill in the TQS, we come to know where Sakhis are facing challenges and where they*  
 406 *have done a good job. Suppose they have difficulties, we come to know and where else they*  
 407 *need more training. That is why I feel it is very important."* (Supervisor\_03, Round 1)

408

409 A major facilitator reported by both Sakhis and experts in supervision with experts was also the  
 410 positive group processes, where both expressed that this was a chance to meet and solve  
 411 common problems before bringing it up with the supervisor.

412

413 *"When all the Sakhis would meet [for group supervision] there used to be good discussions on*  
 414 *how to handle the difficult cases or any case. We would get an idea about it."* (Sakhi\_11, Round  
 415 2)

416

417 *"Group supervision is better since there are just 2-4 in a group. It is better because we can ask*  
 418 *them what difficulties they face. [...] And if they cannot do something, then they ask us. Since they*  
 419 *are few in numbers, they ask us in what better way they can do it [the session] well."*

420 *(Supervisor\_02, Round 1)*

421

422 In general, both experts and Sakhis preferred the expert to be present to ensure that Sakhis  
 423 attend supervision, that the information being shared was accurate, and to help with difficult  
 424 cases. Similarly, both experts and Sakhis noted that living close to one another was a primary  
 425 facilitator for peer supervision without an expert present.

426

427 *“When they [Sakhis] live close by, then mini-meetings happen very nicely. They make time and*  
 428 *sit together or those who are at home only don’t go for work. Their mini-meetings take place*  
 429 *because the Sakhis are at home and don’t go for work.”* (Supervisor\_04, Round 1)

430

431 *“...currently our group is really nice because we live close to each other so it is convenient for*  
 432 *meetings, so we do mini meeting at my home or theirs.”* (Sakhi\_22, Round 2)

433

434

## DISCUSSION

435 This study describes our efforts to systematically examine the accuracy and acceptability of  
 436 peer supervision among peer delivery agents within a randomized controlled trial for perinatal  
 437 depression in Goa, India. Specifically, we developed and estimated the psychometric properties  
 438 of the SHARE Therapy Quality Scale (TQS); we examined the extent to which peers could be  
 439 trained to evaluate their peer counselling skills as reliably as experts; and we conducted a  
 440 qualitative study to examine relevant barriers and facilitators of peer supervision with and  
 441 without experts.

442

### ***Psychometric Properties of Therapy Quality Scale***

444 We found robust and consistent evidence for the TQS to be psychometric reliable and valid.  
 445 Specifically, we found evidence for good internal consistency, test-retest and inter-rater  
 446 reliability of the TQS. In addition, we found good predictive validity between the TQS and  
 447 subsequent patient behaviours at 3-months post-child birth but not on clinical outcomes at 6-  
 448 months post-childbirth. Our findings confirm that therapy quality aligns with a temporal  
 449 pathway: higher therapy quality was related to better patient behaviours (in this case,  
 450 improved patient activation scores) which in turn were related to better clinical outcomes  
 451 (lower depressive symptoms). This temporal pathway has been demonstrated in other  
 452 psychological treatments for depression and alcohol treatment trials in both LMICs (Singla et al.  
 453 et al., 2019) as well as high-income countries (HICs; DeRubeis et al., 1990; Magill et al., 2014).

454

### ***Rating Sessions Reliably***

456 With time, we found that peers were eventually able to rate their audio-recorded sessions as  
 457 reliably as expert supervisors. Our findings confirmed our primary hypothesis of increased  
 458 levels of agreement between peer and expert ratings as demonstrated by a decrease in the  
 459 difference in mean therapy quality scores between raters to non-statistical differences. This  
 460 finding was common in both the assessment of general skills as well as treatment-specific skills,  
 461 illustrating peers’ consistent assessment in both types of skills.

462

463 However, it is important to note that similar to gaining competency-an aptitude to in  
 464 delivering treatment sessions, it took time for peers to be able to rate sessions as reliably as  
 465 experts. As indicated by our results at midline, this did not occur immediately and additional  
 466 training was required within the larger trial to help foster Sakhis’ ability to better understand  
 467 and utilize this tool in order to accurately rate sessions. In previous studies. This is similar to  
 468 other studies which have tested the same question which involved a three-month internship  
 469 phase (Singla et al., 2014). In short, these findings suggest that experts are required to facilitate  
 peer supervision until reliability is achieved.

470 Our qualitative study highlighted that this model of measurement-based supervision  
 471 was found to be acceptable: It promoted accurate feedback between peers and from experts,  
 472 utilized a group process to facilitate a productive and supportive discussion and was found to  
 473 be helpful in skill development particularly when experts were present. These findings speak to  
 474 the general psychological treatment literature which has highlighted the benefits of a shared  
 475 developmental process and vicarious learning as both observers and learners within group peer  
 476 supervision (Borders, 2012), as well as the development of increased self-awareness and skill  
 477 building (Wheeler & Richards, 2007). They also replicate our findings from a lay-counsellor  
 478 delivered intervention for depression which highlighted the preference for structured feedback  
 479 (Singla et al., 2014).

480

#### 481 ***Preference for Supervision with Experts***

482 In addition, peer supervision without experts was reported to be less feasible than  
 483 supervision with experts (also referred to as planned and facilitated supervision, respectively;  
 484 Golia & McGovern, 2013). Despite a preference for supervision with experts—both among  
 485 experts and Sakhis—it is important to note that geographical proximity was considered a key  
 486 facilitator for peer supervision without experts. Additional studies are required to examine  
 487 how to foster the systematic and scaled use of measurement-based supervision to facilitate  
 488 peer supervision without having to rely on the presence of expert supervisors. For example, the  
 489 use and testing of digital platforms may be helpful to overcome such structural barriers in  
 490 facilitating peer supervision (Naslund, Shidhaye, & Patel, 2019). ~~For example, Recent evidence~~  
 491 ~~of digital training platforms was assessed in~~ a recent non-inferiority trial in Pakistan ~~where~~  
 492 ~~demonstrated that~~ competency scores ~~among community health workers in~~ delivering the  
 493 Thinking Healthy Programme ~~by community health workers~~ were equivalent among those  
 494 trained in the digital training arm when compared to face-to-face training (Rahman et al.,  
 495 2019).

496

497 **Strengths.** To the best of our knowledge, this is among the first systematic efforts to examine  
 498 and replicate methods to examine the quality with which non-specialists deliver psychological  
 499 treatments. We utilized methods that were previously tested in the Healthy Activity Program  
 500 (HAP) which examined lay counsellors (Singla et al., 2014)—and extended those findings to  
 501 include peers and examining peer supervision models without experts present. For example, in  
 502 a recent review of 22 studies examining supervision methods for community health workers in  
 503 low- and middle-income countries, none assessed the quality with which community health  
 504 workers (CHWs) delivered their programs (Hill et al., 2014); this finding is consistent in high-  
 505 income countries as well (Borders, 2012). Additional strengths of our study include the rigorous  
 506 examination of psychometric properties of the TQS which was found to be reliable and valid.  
 507 Furthermore, our qualitative study examined the relevant barriers and facilitators of peer group  
 508 supervision, highlighting the preference for supervision with experts present.

509

510 **Limitations.** Despite the strength of our study, we acknowledge several limitations. First, peers  
 511 and experts were not blind to the identity of the peer whose sessions was being rated. Second,  
 512 the therapy quality ratings of peer supervision without experts were not collected, and  
 513 therefore cannot be compared quantitatively with peer supervision with experts present.

514 Finally, despite the important findings highlighting the accuracy and acceptability of peer-based  
515 supervision models, our methods require additional replication of the TQS scale among peer  
516 and other non-specialist delivered treatments as well as future examination of the use of digital  
517 platforms to enhance the acceptability and scalability of measurement-based, peer supervision.  
518

519 In conclusion, peer delivery agents can be trained to implement peer supervision and, with  
520 time, assess therapy quality as reliably as experts using a psychometrically-sound and  
521 acceptable measure of assessment. Despite these achievements, our results also highlight that  
522 the presence of experts is preferred as a facilitator of peer-delivered supervision. In order to  
523 facilitate peer supervision without experts, addressing structural challenges including distances  
524 between Sakhis, costs and time related constraints and ensuring adequate feedback between  
525 Sakhis are needed. Additional studies are required to examine these findings to ultimately  
526 contribute to the scalability of non-specialist delivered mental health care globally.  
527

528

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537

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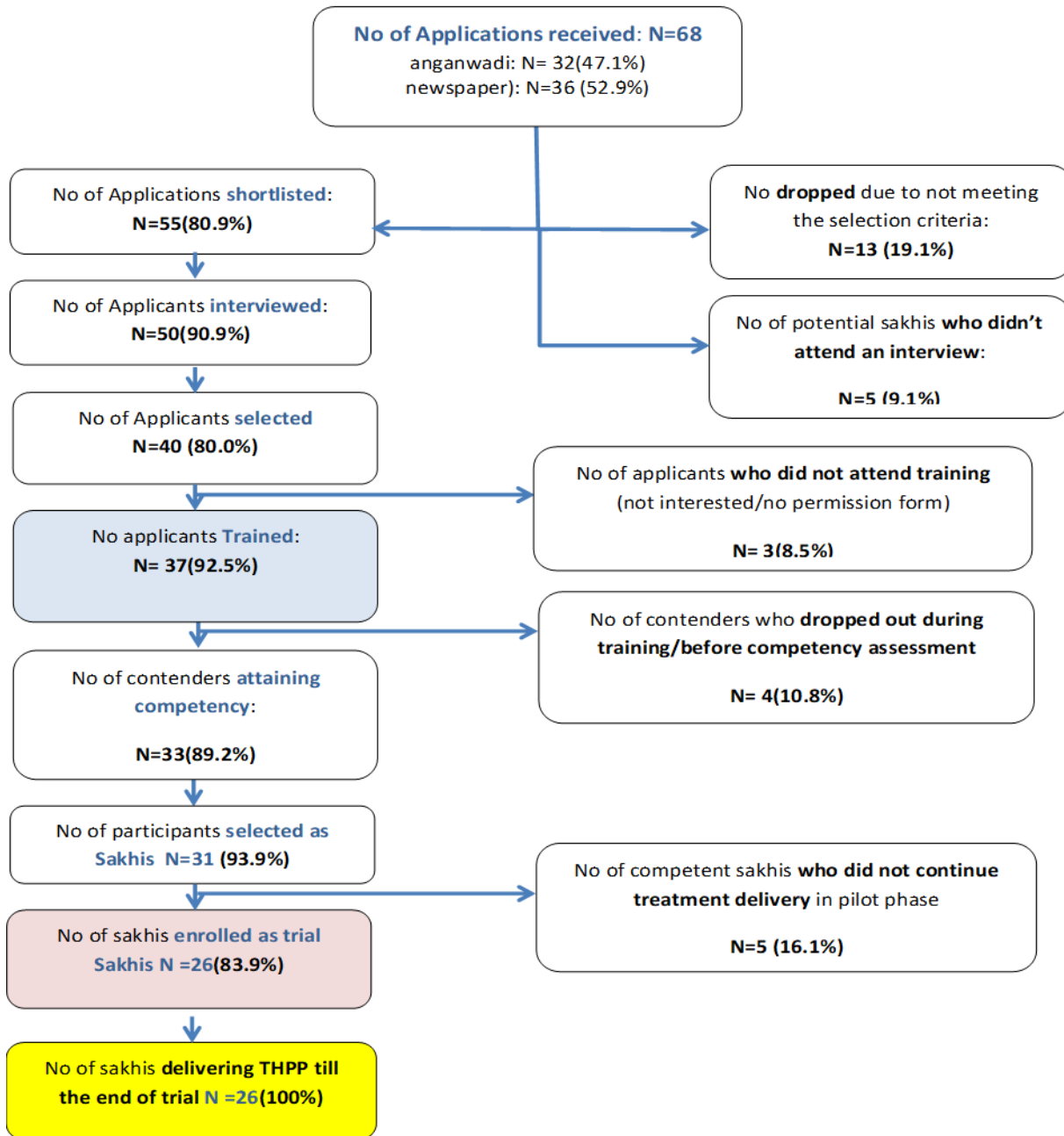
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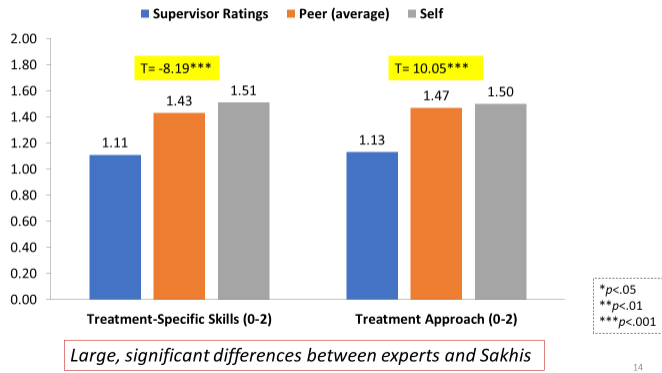
661

662 **Figure 1. Recruitment, Training and Retention of Peers.**  
 663

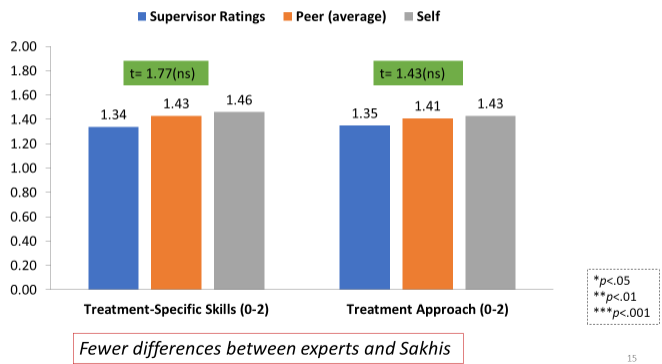


664  
 665

666 Figure 2a. Accuracy of Peer Ratings of Audio-Recorded Treatment Sessions at Midline (February 28  
 667 2016; N=92)



668 Figure 2b. Accuracy of Peer Ratings of Audio-Recorded Treatment Sessions at Endline (October 15,  
 669 2016; N=75)  
 670



671  
 672

673 **Table 1. Qualitative findings from the perspectives of Sakhis and Experts.**  
 674

	Sakhis		Experts	
	Round 1	Round 2	Round 1	Round 2
<b>Supervision</b>				
<i>Barriers</i>				
Geographical and travel barriers	+++	+	+++	+
Initial difficulties with specific items in TQS	+++	-	+++	+
Impact of "Zero" Rating	++	+	++	+
Low motivation to attend without experts	+++	+++	++	++
Competing Demands/No Time	++	+	++	-
No financial incentives	++	++	+	+
<i>Facilitators</i>				
TQS - Structured Feedback and Increased Awareness of Challenges/Skills	+++	+++	+++	++
Group Processes	+++	+++	+++	++
Preference for Supervision with Experts	++	+++	+	+++
Reliance on Experts for Support	+	++	-	-

675  
 676 “-“ = no endorsement  
 677 “+” = some endorsement (<25%)  
 678 “++” = good endorsement (25-59%)  
 679 “+++” = large majority endorsement (>60%)  
 680  
 681