Pushing the bench: A mixed methods study of barriers to and facilitators of identification and referral into depression care by professional nurses in KwaZulu-Natal, South Africa

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Abstract

Objective: Integration of mental health and chronic disease services in primary care could reduce the mental health treatment gap and improve associated health outcomes in low-resource settings. Low rates of nurse identification and referral of patients with depression limit the effectiveness of integrated mental health care; the barriers to and facilitators of identification and referral in South Africa and comparable settings remain undefined. This study explored barriers to and facilitators of nurse identification and referral of patients with depressive symptoms as part of integrated mental health service delivery in KwaZulu-Natal, South Africa.

Design: Triangulation mixed methods study incorporating qualitative and quantitative data.

Methods: Data collection, analysis, and interpretation were guided by the Consolidated Framework for Implementation Research (CFIR). Participants were professional nurses at ten

primary health care facilities in Amajuba, KwaZulu-Natal, South Africa. Qualitative data collection involved semi-structured interviews targeting specific CFIR constructs with high- and low-referring nurses. Deductive and inductive coding were used to derive primary themes related to barriers and facilitators. Quantitative data collection involved a structured questionnaire assessing determinants explored in the interviews. Qualitative comparative analysis was used to identify the necessary or sufficient conditions for high and low nurse referral.

Results: Twenty-two nurses were interviewed. Primary themes related to insufficient training, supervision, and competency; emotional burden; limited human and physical resources; perceived patient need for integrated services; and intervention acceptability. Sixty-eight nurses completed questionnaires. Quantitative results confirmed and expanded upon the qualitative findings. Low self-assessed competency was a consistent barrier to appropriate service delivery.

Conclusions: To promote the success of integrated care in a context of severe staff shortages and over-burdened providers, implementation strategies including direct training, structured supervision, and routine behavioral health screening tools are warranted. Interventions to improve mental health literacy of patients as well as emotional support for nurses are also needed.

Keywords

Depression; Primary health care; Integrated health care; HIV; Chronic disease; South Africa

1. Introduction

Mental and substance use disorders are the leading causes of disability in South Africa (Vos et al., 2016). Rates of common mental disorders (CMDs) like depression, anxiety, and harmful alcohol use are elevated among South Africans living with HIV and other chronic diseases (Myer et al., 2008; Pappin et al., 2012; Bhana et al., 2015); untreated co-morbid CMDs limit the effectiveness of treatments for HIV and other chronic diseases by reducing retention and medication adherence (Peltzer et al., 2010; Nakimuli-Mpungu et al., 2012; Wykowski et al., 2019), leading to increased risk of treatment failure and mortality (Haas et al., 2020a, 2020b). However, only one-quarter of people in South Africa experiencing mental disorders receive mental health treatment from any sector (Seedat et al., 2009). Given the paucity of financial and human resources for mental health, South Africans seeking mental health treatment are over three times more likely to do so from general medical providers rather than mental health specialists (Seedat et al., 2009). Integration of effective mental health care into the primary health care (PHC) platform has the potential to reduce the treatment gap and improve associated health outcomes (Collins et al., 2011). South Africa has adopted an Integrated Clinical Services Management (ICSM) model to strengthen integrated care for chronic disease – including care for CMDs – through revising technical roles/responsibilities, policies/regulations, the physical environment, and workflows, and through the use of a standardized clinical decision support tool, to serve the majority of chronic care patients at the PHC delivery point (Mahomed & Asmall, 2015).

Integration of mental health and chronic disease care at the PHC level has repeatedly been shown to be cost-effective and equitable in high-income settings (Woltmann et al., 2012). Preliminary evidence from South Africa indicated that real-world implementation of an

integrated care model led to improved PHC provider detection of depression and subsequent reductions in depressive symptoms among patients with chronic disease (Petersen et al., 2019; Petersen et al., 2021). Clinical nurse practitioners (CNPs) are at the core of the ICSM in South Africa (Petersen et al., 2015). CNPs function as case managers and are responsible for detecting depression and other CMDs during routine chronic disease care, offering brief psycho-education, referring patients into appropriate treatment, and managing ongoing care (Fairall et al., 2018; Petersen et al., 2018). On the other hand, evidence from South Africa suggests that even once trained in integrated care, CNPs successfully identify about 51% of patients with depressive symptoms and refer only about 18% into treatment (Kemp et al., 2020). With half of the probable depression cases going undetected and four-fifths going untreated, the potential overall effectiveness of integrated CMD care models may be limited (Glasgow et al., 2006).

Nurses and other PHC providers face many barriers to integrating mental services into their activities (Anthony et al., 2010) Identification and exploration of these barriers will enable targeted refinements to the integrated care model and its implementation strategy (Carlfjord et al., 2010; Jacobs et al., 2015). In the case of integrated mental health services in South Africa, such provider-level determinants remain critically undefined. There is, therefore, an urgent need to identify these barriers and facilitators and refine implementation strategies accordingly. Our primary objective was to explore barriers to and facilitators of nurse identification and referral of patients with depressive symptoms, as part of integrated mental health service delivery in one district site in KwaZulu-Natal, South Africa. Our secondary objective was to identify the particular combinations of nurse-level determinants that were necessary or sufficient for appropriate referral.

2. Methods

2.1. Study design and theoretical framework

This was a sequential, triangulation mixed-methods study (QUAL-QUANT) (Bryman, 2006). Qualitative and quantitative data collection, analysis, and interpretation were guided by the Consolidated Framework for Implementation Research (CFIR), which is a meta-theoretical framework synthesizing the spectrum of terminologies, definitions, and constructs related to implementation into a set of multi-level determinants of implementation outcomes (Damschroder et al., 2009). The CFIR can be adapted and applied flexibly to identify contextual factors that predict implementation success, with the goal of refining intervention components and implementation strategies (Nilsen, 2015). It comprises thirty-nine constructs sorted under five domains: intervention characteristics, outer setting, inner setting, characteristics of individuals, and process.

2.2. Integrated care model and setting

This study was part of the Southern African Research Consortium for Mental health INTegration (S-MhINT), an observational implementation research study aiming to strengthen integrated primary mental health service delivery for patients with depressive symptoms in particular in South Africa. S-MhINT study methods are described in detail elsewhere (Petersen et al., 2021), as are the specifics and history of the integrated care

model, which was developed and evaluated in South Africa with the support of the Programme for Improving Mental Healthcare (PRIME) consortium (Fairall et al., 2018; Kemp et al., 2020; Petersen et al., 2018; Petersen et al., 2021). The model was first piloted and trialed in the North West Province, and subsequently scaled up in the Amajuba district of KwaZulu-Natal through the Mental health INTegration progamme (MhINT) with funding from the US President's Emergency Plan For AIDS Relief (PEPFAR). As part of the model, CNPs receive supplemental training in clinical communication skills and the mental health components of a national standard clinical decision support tool (Adult Primary Care Guideline 101, or PC 101) (Fairall et al., 2015). This tool had already been rolled out to public primary health facilities in South Africa as part of the implementation of the ICSM, and CNPs had received training in its use through a cascade model of training whereby facility level APC trainers were trained by master trainers to train CNPs in their facilities. The tool includes a flow diagram to assist CNPs in screening and assessing patients for depression, as well as providing brief psycho-education and managing patient care over time. At the time of this study, all CNPs were expected to have been exposed to the APC tool and to have one available in their consultation rooms. The same cascade, train-the-trainer approach was used for the supplemental, APC mental health-specific training. CNPs are subsequently responsible for identifying patients with depressive symptoms, assessing severity, making referrals, and managing care, with supervision and support from facility trainers. Referral pathways depend on symptom severity and include PHC physicians and hospital-based, district-level psychologists for severe or complex cases, or PHC-based counsellors, who are trained and supervised to deliver up to eight structured sessions of individual- or group-based evidence-based counselling for mild and moderate cases (Selohilwe et al., 2019). In Amajuba, existing facility-based lay HIV counsellors were initially trained to provide the evidence-based counselling. Implementation was facilitated by a cross-cutting, health systems strengthening approach and the application of continuous quality improvement methods (Horwood et al., 2017; Langley et al., 2009).

2.3. Study participants

CNPs at ten PHC facilities implementing the integrated care model in Amajuba District, KwaZulu-Natal, were included in this study. Amajuba is one of KwaZulu-Natal's three pilot sites for South Africa's National Health Insurance program, and was noted as high-performing by the country's Ideal Clinic Realisation and Maintanance (ICR-M) quality assurance program at the time of the study (Department of Health, 2019). Amajuba is divided into 3 sub-districts, with the Newcastle sub-district comprising mostly an urban population. The participating facilities had been implementing the integrated care model since late 2017.

2.4. Qualitative data collection

We conducted in-depth, semi-structured interviews with CNPs. We used routine program data to create a sampling frame of all CNPs at ten PHC facilities implementing the integrated care model and counted the chronic care patients referred for depression counselling by each CNP in the previous three months (June–August 2018). We stratified CNPs as high or low referring, defined as above or below each facility's median volume of monthly depression referrals and sampled sequentially from the high and low referrers

within each facility. Overall, CNPs referred on average 1.2 patients per month (median: 0.5, range: 0 to 11.5). Facility-specific median referral rates per month ranged from 0 to 2.75.

Potential participants were recruited at each health facility with the approval of their respective facility managers and district management. Interviews were conducted in private rooms once written informed consent was obtained. One to three members of the study team (CK, NM, and DS) conducted each interview following a semi-structured interview guide that explicitly drew from CFIR constructs in the Intervention, Individual, and Inner Setting domains. We chose these domains because we expected substantial variation in constructs at those levels, as well as variation in individual perception of the intervention. However, we did not expect variation at the Outer Setting or Process levels, as we sampled from within one district with a consistent approach to implementation of the integrated care model. Only constructs hypothesized to be relevant were included to limit interview duration (Brehaut & Eva, 2012). Interviews also covered topics not explicitly matching individual CFIR constructs, but nevertheless hypothesized to be important: exposure to training and supervision related to integrated mental health care, experience of service delivery, perceived barriers and facilitators to implementation and service delivery, perceived benefits of implementation, and suggestions for modifications to the implementation strategy. Interview guides were developed iteratively with input from the study team and field staff. Interviews lasted up to 50 min and were digitally audio-recorded with participant permission. Interviews were conducted in English, though participants occasionally switched to isiZulu. All interviewers were proficient in isiZulu. Interviews occurred in September 2018.

2.5. Qualitative data analysis

Recorded interviews were transcribed verbatim. Transcripts were analyzed using qualitative content analysis (Hsieh & Shannon, 2005). We started with a publicly available codebook containing the CFIR domains and constructs and their associated definitions (CFIR Research Team, 2019). The first author read all transcripts several times to allow for full immersion of the data and examined the transcripts for patterns, connections, similarities, and points of difference, blinded to the referral outcome. Speech content was coded deductively into specific CFIR constructs where possible. Where speech content did not map to existing CFIR constructs, new codes were created inductively as central concepts emerged and key terms and phrases were identified (Corbin & Strauss, 2008; Padgett, 2016). Qualitative analysis was performed using QSR International NVivo 12 (QSR, 2012).

2.6. Quantitative data collection

We then invited all CNPs at implementing facilities to complete brief structured questionnaires with facility manager approval. S-MhINT fieldworkers conducted questionnaires on tablets in private rooms once written informed consent was obtained. Questionnaires were designed to assess the multi-level barriers and facilitators that had been explored in the qualitative portion of our study. Measures included the 16-item Mental Illness: Clinicians' Attitudes (MICA) scale of mental health-related stigma (Gabbidon et al., 2013), the 6-item measure of role overload (Thiagarajan et al., 2006), the 4-item Acceptability of Intervention Measure (AIM) (Weiner et al., 2017), and the 12-item Organizational Readiness for Implementing Change (ORIC) (Shea et al., 2014).

Questionnaires also measured nurse self-reported exposure to in-service training and competency related to the identification, assessment, treatment, and referral of patients with depression, their self-reported rates of depression service delivery, and their perceived barriers to implementation of the integrated model and providing depression care. Non-validated measures were either sourced from previous studies conducted by the study team in the same context or developed iteratively with input from the study team and field staff. Questionnaire data were de-identified and it was not possible to link individual responses to observed nurse referral rates. Table 1 summarizes questionnaire measures. Questionnaire interviews lasted up to 30 min and were conducted in English. Data collection occurred between January and April 2019.

2.7. Quantitative data analysis

Self-assessed competency, AIM, ORIC, and role overload summary scores were created by averaging their respective item responses. Training exposure and MICA scores were created by summing responses, using reverse scoring where necessary. An outcome variable of the self-reported proportion of patients appropriately referred was created by multiplying self-reported proportions of patients with depressive symptoms identified, then assessed, then referred by each participant. Descriptive analyses, including t-tests and $\chi 2$ tests, were conducted to summarize and compare participant characteristics stratified by self-reported referral rate (fewer than 100% appropriately referred vs. 100% appropriately referred).

We then used crisp set qualitative comparative analysis (csQCA) to identify the conditions that were necessary or sufficient for self-reported 100% referral, as well as the conditions that were necessary or sufficient for <100% referral (Schneider & Wagemann, 2012). csQCA is ideal for the analysis of medium-N sample sizes where the goal is to understand the multiple ways in which explanatory variables come together to reach a given outcome (Kane et al., 2014). The first step was to identify the relevant conditions for the analysis: these were the k = 4 factors that were found to vary significantly (p < 0.05) between 100% and <100% referrers (training exposure, competency, intervention acceptability, and organizational readiness), and an additional factor that the qualitative data suggested acts as an overall suppressant to service delivery (role overload). Given the high correlation between the two ORIC sub-scales (r = 0.81), these were combined into an overall ORIC score for the csQCA. With k = 5 conditions or $2^5 = 32$ possible condition combinations, we maximized the number of conditions given the risk of limited diversity (i.e. many unpopulated condition combinations, also called logical remainders). The second step was to calibrate the condition and outcome sets by dichotomizing the continuous condition variables as *high* or *low*. Calibration thresholds were set by reviewing response distributions for clear cut-offs (e.g., bimodal distributions); where cut-offs were not clear from response distributions, Likert scale options were used (e.g., overall responses of 'Agree' or 'Strongly Agree' vs. otherwise) (Schneider & Wagemann, 2012). Role overload was inverted so that its presence was positive (i.e., no role overload), in alignment with other scores. Table 1 describes the calibration thresholds used for each measure. As a sensitivity analysis, we calibrated conditions above vs. below their median values. The third step was to test for necessity, assessing whether any condition or combination of conditions was a superset of the positive 100% referral or negative <100% referral outcomes. Conditions exceeding

a minimum consistency threshold of 0.90, coverage threshold of 0.50, and relevance threshold of 0.60 were considered necessary (Schneider & Wagemann, 2012). The fourth step was to construct truth tables listing all possible condition combinations, the numbers of participant cases populating each combination, and the consistency (i.e., the proportion of each combination that is 100%-referring). Truth tables were created for both positive and negative outcomes. Combinations exceeding a minimum consistency threshold of 0.75 were considered productive of each outcome. Finally, we used Boolean minimization to derive parsimonious solutions incorporating logical remainders (i.e., condition combinations with no populating cases) but excluding contradictory simplifying assumptions (i.e., logical remainders which may be incorporated into parsimonious solutions for both positive and negative outcomes) (Du a, 2018). These analyses were performed in Stata and R (R Core Team, 2017; StataCorp, 2015).

2.8. Ethics

All study procedures were approved by the Biomedical Research Ethics Committee of the University of KwaZulu-Natal (BF190/17), by the Department of Health of the Province of KwaZulu-Natal, and by the Human Subjects Divisions of the University of Washington (STUDY00002331).

3. Results

3.1. Qualitative results

We interviewed 22 CNPs (Table 2). This sample was sufficient to achieve data saturation given purposive sampling by referral volume (Sandelowski, 1995). Almost half were classified as high referrers (10, 45.5%). Most were women (21, 95.5%), and few were the assigned trainers for their respective facilities (4, 18.2%).

We identified five broad themes. Quotations are cited using the scheme [sex/facility trainer vs. not/high vs. low referring].

3.2. Training, supervision, and competency

This theme aligns with the Access to Knowledge and Information construct under the Inner Setting domain of the CFIR, as well as with the Knowledge and Beliefs about the Intervention, Self-efficacy, and Individual Stage of Change constructs under the Characteristics of Individuals domain. Participants felt that in-service training was an important first step to CNPs initiating and providing appropriate services for patients with depression. All participants reported some exposure to pre-service training in psychiatric nursing; high-referring participants were more likely to report high exposure to additional in-service mental health-related training. However, even high-referrers questioned the reliance on the train-the-trainer model of training, wherein facility trainers were expected to train and mentor their peers at the clinic during the workday. Some facility trainers suggested that we modify the implementation strategy for the integrated care model to include comprehensive, direct training in skills related to mental health service delivery, instead of peer-based cascade training, noting that they had insufficient time to adequately train their peers:

> "I think all the professional nurses … must go through the trainings because it is
> not so easy to do the trainings at [the] workplace, because we, you know have
> targets that you have to do and what what … I was suggesting that each and every
> professional nurse to attend the course." [F/Master Trainer/High Referring]

Though participants noted the specific mental health-specific training that they had received
– either pre-service training in psychiatric nursing, or in-service training at the launch
of the integrated care model – most were vague about or unaware of any specific
supervision or mentorship they had been offered related to mental health. Some indicated
that there had been one-off or occasional visits by district or project-related staff to their
facilities to support the integrated care model, though few could describe what had been
discussed during those visits. Several participants, including both high- and low-referrers,
recommended we modify the implementation strategy for the integrated care model to
strengthen and make rountine the mental health-related supervision to promote appropriate
service delivery:

> "This thing is an ongoing process for somebody who's like, clued in on what is
> supposed to be done. You need to mentor the other people. You train them, you
> mentor them at the same time. But now the mentoring part, sort of lacks … So
> that at least now they come to grips with what is expected." [F/Master Trainer/Low
> Referring]

Regardless of the limitations of prior approaches to in-service training and supervision,
most participants reported feeling competent and capable of identifying depression in
their patients, assessing its severity, making an appropriate referral, and managing care
over time. Even low-referring nurses generally stated that they had the necessary skills,
referencing pre-service training in primary health care and psychiatric nursing, the utility
of the structured decision support tool – which was available in exam rooms at all sampled
facilities – and the visibility of depressive symptoms in their patients:

> "Using the skills of a psychiatric … we used to manage, we used to manage."
> [F/Not Trainer/Low Referring]

3.3. Mental health stigma and emotional burden

This theme was inductive, though it aligns with the Other Personal Attributes construct
under the Characteristics of Individuals domain of the CFIR. Participants reported low levels
of stigmatizing attitudes towards patients with depression and other mental disorders, and
there were no apparent differences between high- and low-referrers in terms of mental
health stigmatization. Instead, many participants emphasized that their goal was to treat their
patients holistically, referencing their role as primary care providers:

> "When a patient comes, he or she must be assessed in totality. Spiritually,
> psychologically, physically … you must nurse the patient as a whole." [F/Not
> Trainer/Low Referring]

Indeed, rather than stigmatize patients with depression, participants often discussed how
closely they empathized with patients in emotional distress, indicating that working with
those patients resulted in the surfacing of some of their own issues. This made engaging

with patients with depression difficult, though in some cases it was also highly motivating. Several participants suggested that for the integrated care model to be successful, the implementation strategy should be modified to include psychosocial support and counselling to nurses in need:

> "But sometimes it's also difficult to me, because the person's problems stay with me, and there's no-one I can talk to, so sometimes I myself have got a headache because of other people's problems. But then I have to help them, no one's helping me, though." [F/Facility Trainer/High Referring]

3.4. Human and physical resources

This theme aligns with the Readiness for Implementation construct and Available Resources sub-construct under the Inner Setting domain of the CFIR, as well as with the External Policies and Incentives construct under the Outer Setting domain. All participants stressed repeatedly that they were working at maximum capacity and that they did not have enough time to see all their patients, meet their service delivery targets, and fill out the necessary paperwork – much less to carefully identify all patients for depression and perform in-depth mental health assessments. High- and low-referrers were equally likely to describe their workload as overwhelming. Several felt that the integration of new services at the PHC level had resulted in them becoming increasingly burdened with tasks, all while they faced a severe staff shortage:

> "We're short staffed, we've got to do our targets, we've got to treat our clients, we've got a long queue outside, and the clients complain that someone's in with you for a long time, and you actually have to do everything, everything's got a target. And there's a lot of paperwork that comes with it too." [F/Facility Trainer/Low Referring]

Even high-referring participants reported struggling to offer appropriate depression care given their workload. Several stated that this was a significant stressor, leading to low self-esteem and symptoms of depression, as they felt they were failing to provide their patients with adequate attention. Participants suspected that they were missing a significant proportion of their clients with depressive symptoms and other mental disorders:

> "When will I see that depression that you are talking about? Because I'm rushing, I'm rushing … we must look at the actual workload of each individual, if you need to have the complete, give holistic care … Because we want to, but the pressure of the work, we end up pushing the bench." [F/Not Trainer/High Referring]

Beyond the nursing staff shortage, participants reported barriers related to the availability of other human and physical resources. Though physicians visited PHC facilities with increasing frequency, hospital-based psychologists were also facing staff shortages and did not visit PHC facilities. Meanwhile, only one lay HIV counsellor had been trained per facility implementing integrated care; when a lay counsellor was sick or was asked to perform other duties in the facility (e.g., driving), as was often the case, participants reported that it became difficult to make appropriate referrals. Limited access to telephones restricted provider ability to follow up with patients and link them to care. Finally, several participants

noted that they were unable to make appropriate referrals when the necessary mental health referral forms ran out.

3.5. Patient needs, barriers, and facilitators

This theme aligns with the Patient Needs and Resources construct under the Outer Setting domain of the CFIR. Most participants believed that there was a significant burden of untreated depression and other mental disorders in their communities, with some noting that, "stress is everywhere," [F/Not Trainer/Low Referring] or that, "there's a lot of patients that we are missing out there," [F/Facility Trainer/High Referring] and that there was a clear need for integrated mental health care at the PHC level. Participants reported that, given their time constraints, they were more likely to identify depression in patients in obvious distress, rather than those patients requiring careful assessment:

> "I can identify the client with depression, especially those who seem to have different moods like mood swings, maybe crying, many of them cries when they have some problems which may need me and finally, says maybe, she or he has depression." [F/Not Trainer/High Referring]

On the other hand, participants frequently suggested that they were less able to identify depression among patients with low mental health literacy, or among patients who hide their emotional distress, as considerably more consultation time is required to identify such cases:

> "For the patients who have got depression, the problem we are getting is from the patient themselves. Because our patients sometimes are not honest, they cannot reveal the whole thing, even if you can see that the person has got a problem, you need to probe, and probe, and probe." [F/Not Trainer/Low Referring]

3.6. Intervention acceptability and Relative Advantage

This theme aligns with the Relative Advantage, Complexity, and Cost constructs under the Intervention Characteristics Domain. Overall, participants were pleased with the integrated care model. They felt it was improving patient health and that it made sense to deliver services for depression and other CMDs at the PHC level, given that PHC facilities were numerous and accessible at the community level:

> "I am satisfied because it is … within the community where the patient lives. It is accessible. There is no transport that is needed to the patient, if the patient feels like coming, the patient has a problem, she needs to come, walking, and find the person to assist the patient." [F/Not Trainer/Low Referring]

High-referring participants tended to be more expressive and specific in describing the aspects of the integrated care model that they appreciated. For example, some believed that the introduction of mental health services at the PHC level – especially the delivery of so-called "morning talks," or mental health-focused vignettes delivered by lay counsellors to waiting rooms full of patients – had the potential to improve overall patient mental health literacy:

> "And another thing that helps us a lot, is the reading of the story. When they hear those stories, you find a lot of them saying hmm I think I've also got this … then they start telling you about their problems." [F/Not Trainer/High Referring]

Several participants acknowledged that the implementation of the integrated care model came with added cost. In particular, they worried about the additional time required to identify depressive symptoms and other disorders, to assess severity, and to make appropriate referrals. Several of these participants recommended that the implementation strategy for the integrated care model be revised to incorporate routine screening for depression and other common mental disorders, in the hopes that this would enable them to identify more patients in need and reduce the time required for assessment. Some recalled initially having a negative attitude towards the model given their full workload. However, several high-referring participants suggested that if implemented well, integrated care could save them time and effort in the long run, as they found they were able to treat the underlying problems of patients presenting repeatedly with diffuse symptoms and minimize future patient visits:

> "I was so confused that it can help, I just saw an extra, what? An extra work that we were given here in the clinic, on top of this heavy load we are having. But it helps a lot, it helps a lot, now I don't want to lie, it helps." [F/Not Trainer/High Referring]

3.7. Quantitative results

Sixty-eight participants completed the questionnaire (Table 3). Most (63, 93%) were female and almost all (66, 97%) were Black. Twenty-four (35%) reported that they routinely referred all eligible patients for depression treatment. On average participants had been working as nurses for 21 years (standard deviation [SD]: 10) and had been at their respective health facilities for 7 years (SD: 6). Exposure to in-service training related to depression care was high overall (mean: 3.1, SD: 1.3), as was self-reported competency (mean: 4.1, SD: 0.6); 100%-referring nurses had higher training exposure ($p = 0.046$) and higher competency ($p < 0.001$) than <100%-referring nurses. Mental health stigmatization was low to moderate (mean: 40.2, SD: 12.1) and equal across groups. Intervention acceptability (mean: 4.2, SD: 0.6), organizational commitment (mean: 4.0, SD: 0.9), and organizational efficacy (mean: 3.9, SD: 0.9) were high overall, and higher in the 100%-referring group ($p < 0.001$, $p = 0.003$, and $p = 0.002$, respectively). Role overload was moderately high (mean: 3.6, SD: 1.0) and equal across groups. The most frequently reported barriers to depression care included insufficient time (39, 62%), insufficient training (19, 30%), insufficient practice (16, 25%), inability to prescribe appropriate medication (15, 24%), and insufficient supervision (12, 19%).

No conditions or combination of conditions met the minimum thresholds for necessity for the positive 100%-referring or negative <100%-referring outcomes. Appendix A presents the truth table for the positive, 100%-referring outcome, representing all thirty-two possible combinations of five dichotomized conditions. All but eight possible combinations were populated by at least one case; two of the unpopulated logical remainders (9 and 11) were identified as a contradictory simplifying assumption and were excluded from subsequent minimization. Five combinations met the consistency threshold of 0.75. Boolean

minimization reduced these to a single parsimonious model with two pathways (Table 4): 1) TRAINING = 1 * COMPETENCY = 1 * NO ROLE OVERLOAD = 1, and 2) TRAINING = 0 * COMPETENCY = 1 * ACCEPTABILITY = 1 * NO ROLE OVERLOAD = 0 (overall coverage = 0.46). COMPETENCY = 1 was observed in both solution pathways, though alone it was not sufficient to produce the high referral outcome; rather, it combined with other conditions (i.e., TRAINING = 1, AIM = 1) to yield the outcome. Appendix A also presents the truth tables and results for the negative outcome (<100%-referral) and alternative calibration sensitivity analyses. For the negative outcome, Boolean minimization resulted in a single model with five pathways (Apendix A, overall coverage = 0.77). COMPETENCY = 0 was observed in three of these pathways. Sensitivity analyses testing the median-value calibration confirmed that COMPETENCY = 1 was commonly observed among solutions leading to high referral.

4. Discussion

We used a novel, theory-driven mixed-methods approach to explore the barriers to and facilitators of primary depression care as part of real-world implementation of an integrated mental health service delivery model in KwaZulu-Natal, South Africa. Participants were professional nurses at the PHC level; many had over twenty years of nursing experience. Interviewed nurses cited their pre-service training in mental health and their access to the standardized decision support tool as facilitators of depression care, though they felt the train-the-trainer model of training and the limited approach to supervision were insufficient to maintain high levels of service delivery given the other demands on their time. Mental health stigma appeared to be at low levels. Nurses faced significant staff shortages, demanding targets, and the expansion of PHC services, leading to substantial risk of burnout. Few felt they had the necessary time to appropriately assess patients with depression, and several indicated that they needed self-care training or other resources to improve their own mental health. However, most recognized the unmet need for mental health services in their patient population and felt the model had the potential to be effective. Quantitative results confirmed and expanded upon the qualitative findings. Mental health stigma was measured as low to moderate and role overload was moderately high; neither were associated with self-reported referral rate. We found no nurse-level factors that were individually necessary for high referral; that is, some participants managed to be high-referrers despite their high workload, limited training exposure, or the weak organizational readiness of their health facility. Nevertheless, self-reported competency appeared to be consistently important for nurses to appropriately care for patients with depression. Common self-reported barriers to providing depression care included insufficient time, training, and practice; these aligned closely with qualitative findings.

Our results agree with previous studies emphasizing that generalist providers require adequate training, supervision, mentorship, and emotional support to adopt evidence-based mental health services and deliver them with fidelity (Mendenhall et al., 2014; Beidas & Kendall, 2010; Jordans et al., 2011). Evaluations from Nepal, Liberia, and Uganda suggest that training does not guarantee provider competence across all dimensions of task-shared mental health service delivery, though trainings could be improved by incorporating and targeting standardized measures of competency (Kohrt et al., 2018). Even so, initial one-off

trainings are clearly not enough (Thielke et al., 2007): competence only comes from a cycle of learning, doing, and reflecting, guided by supervision and mentorship (Herschell et al., 2010; Beidas et al., 2011, 2012; James et al., 2008). Without robust supervision, programs risk low intervention fidelity, low clinician competency, and reductions in rates of service delivery (Massatti et al., 2008; Tibbits et al., 2010). Supervision is also an important source of emotional support and burnout prevention; our findings agree with previous studies suggesting that ongoing stress management and debriefing sessions for PHC staff are much needed in this context (Edwards et al., 2006; Knudsen et al., 2008; Petersen, 2000). Programs that train generalists to offer mental health services without first considering their workload and skillset, and without reinforcing their competence through supervision, risk exposing patients to inappropriate treatment (Saraceno et al., 2007). Task-sharing cannot be effective if generalists are overwhelmed with services they cannot provide (Ventevogel, 2014). Interestingly, though previous studies suggest that South African healthcare providers do perpetuate stigma related to mental disorder (Egbe et al., 2014), we found no relationship between stigmatizing attitudes and referral volume in our sample.

This study had several limitations. First, we recruited CNPs at PHC facilities implementing the integrated care model who were available during data collection periods. We were unable to sample CNPs on night duty or nurses on leave. We attempted to minimize bias by stratifying interview recruitment by referral volume to maximize the diversity of our sample, and by sampling sequentially from high and low referrers at each facility. We also invited all available CNPs to complete the questionnaire. Second, we relied on routine program data to estimate referral volumes for interview sampling stratification. These data allowed us to count depression referrals to in-facility counsellors, though we could not estimate numbers of referrals to physicians and psychologists, nor could we adjust referral volumes for the true underlying number of patients with depression seen by each nurse. Third, questionnaire data were de-identified and we could not link questionnaires to observed referral rates; we relied on self-reported referral rates in our quantitative analysis, introducing the potential for social desirability bias. Nonetheless, our mixed-methods approach minimized this limitation by triangulating findings across semi-structured interview and structured survey data. Moreover, our use of the CFIR to guide data collection and analysis promoted the rigor, replicability, and comparability of the study.

Despite these limitations, our results have substantive implications for the future implementation of integrated care in South Africa and comparable low-resource settings. Participants advocated for direct in-service training and structured, supportive supervision of PHC providers as opposed to the cascade, train-the-trainer model of training and unstructured, ad-hoc supervision. Though there is broad recognition that specialist mental health providers can supervise PHC providers to deliver mental health care, these supervisory roles will have to be clearly delineated and compensated (Patel, 2009; World Health Organization, 2008), and there may be insufficient numbers of specialist providers – especially psychiatric nurses – to offer sustained supervision (Patel et al., 2010; Petersen et al., 2011). Telesupervision by phone, WhatsApp, or another mobile platform may be necessary (Kemp et al., 2019). Indeed, integrated care and specialized mental health services face many of the same challenges in low-resource settings, namely: staff shortages, under-spending, and a lack of essential governance, policy, and regulations to support and enforce

the provision of high-quality care (Saxena et al., 2007; World Health Organization, 2018). Given this, additions to PHC provider workload should be minimized wherever possible. For example, mental health referral forms should be harmonized with the patient file and other routine clinic forms to reduce the burden of new paperwork. Deployment of electronic medical record systems would be a further improvement and would facilitate measurement-based care by giving providers access to real-time, longitudinal data on patient care and health outcomes. Participants also advocated for the use of CMD screening tools at patient intake to reduce the burden of nurse case detection and assessment, and to improve rates of nurse identification of eligible cases (O'Connor et al., 2009); validated tools are increasingly available in South Africa and other settings (Bhana et al., 2019). Several participants felt that counselling and other forms of evidence-based psychosocial support should be made available to CNPs and other primary care providers, as they will be better able to manage the mental health needs of their patients if their own needs are met (Edwards et al., 2006). Finally, efforts are needed to build mental health literacy and demand for care at the community level (Shidhaye et al., 2017).

5. Conclusion

We sampled professional nurses to assess the barriers to and facilitators of identification and referral of patients with depressive symptoms as part of an integrated model in KwaZulu-Natal, South Africa. Results suggest that nurses are motivated to meet the needs of patients with depression and other mental disorders and believe that integrated services could be effective. However, nurses are understaffed and overworked, and gaps in training, supervision, and availability of emotional support persist. To promote the success of integrated care in this context, implementation strategies including direct training, structured telesupervision, and routine screening tools are warranted, as are interventions to improve patient mental health literacy as well as emotional support for nurses.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements

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Table 1

Questionnaire measures.

Variable	Measure	QCA Calibration
Barriers and Facilitators:		
Socio-demographics	Sex, race, qualifications, employment duration	n/a
Exposure to in-service training related to depression care	Categorical, e.g., "Have you received in-service training in screening patients for depression?"	Complete vs. incomplete in-service training
Competency related to depression care	Likert scale, strongly disagree to strongly agree, e.g. "You can screen patients for depression."	Mean score 4 vs. <4 out of 5
Barriers to implementation and service delivery	Multiple response list, e.g. "I do not have enough training"	n/a
Mental health stigma	MICA (Fairall et al., 2015)	n/a
Role overload	Role Overload Scale (Selohilwe et al., 2019)	Mean score 3.67 vs. <3.67 out of 5
Intervention acceptability	AIM (Langley et al., 2009)	Mean score 4 vs. <4 out of 5
Facility readiness to implement change	ORIC (Horwood et al., 2017)	Mean score 4 vs. <4 out of 5
Outcome:		
Proportion of patients with depressive symptoms appropriately referred	Likert scale, none to all, e.g. "How many of your chronic care patients do you screen for depression?"	100% referral vs. <100% referral

Abbreviations MICA: Mental Illness: Clinicians' Attitudes. AIM: Acceptability of Intervention Measure. ORIC: Organizational Readiness for Implementing Change. QCA: Qualitative Comparative Analysis.

Table 2

Interview participant characteristics (n = 22).

	Low Referring	High Referring	Total
N	12	10	22
Women	12 (100.0%)	9 (90.0%)	21 (95.5%)
Facility Trainer	2 (16.7%)	2 (20.0%)	4 (18.2%)

Table 3

Questionnaire participant characteristics stratified by self-reported referral rate (n = 68).

Factor	<100% Referring	100% Referring	p	Overall
N	44	24		68
Women	39 (88.6%)	24 (100.0%)	0.086	63 (92.6%)
Black	42 (95.5%)	24 (100.0%)	0.29	66 (97.1%)
Married	22 (50.0%)	14 (58.3%)	0.51	36 (52.9%)
Diploma in Nursing	35 (79.5%)	22 (91.7%)	0.19	57 (83.8%)
Years as nurse, mean (SD)	19.3 (10.0)	24.5 (9.2)	0.045	21.1 (9.9)
Years at facility, mean (SD)	6.7 (5.4)	8.8 (7.6)	0.19	7.4 (6.3)
Training summary score, range: 0–4, mean (SD)	2.8 (1.5)	3.5 (0.8)	0.046	3.1 (1.3)
Competency summary score, range: 1–5, mean (SD)	3.9 (0.6)	4.5 (0.4)	<0.001	4.1 (0.6)
MICA, range: 16–96, Cronbach's alpha: 0.76, mean (SD)	40.0 (12.2)	40.6 (12.2)	0.83	40.2 (12.1)
AIM, range: 1–5, Cronbach's alpha: 0.82, mean (SD)	4.0 (0.6)	4.6 (0.5)	<0.001	4.2 (0.6)
ORIC				
Commitment, range: 1–5, Cronbach's alpha: 0.86, mean (SD)	3.8 (0.9)	4.4 (0.7)	0.003	4.0 (0.9)
Efficacy, range: 1–5, Cronbach's alpha: 0.95, mean (SD)	3.6 (0.9)	4.3 (0.6)	0.002	3.9 (0.9)
Role Overload, range: 1–5, Cronbach's alpha: 0.83, mean (SD)	3.6 (0.8)	3.5 (1.2)	0.66	3.5 (1.0)

Abbreviations. SD: standard deviation. MICA: Mental Illness: Clinicians' Attitudes. AIM: Acceptabilty of Intervention. ORIC: Organizational Readiness for Implementing Change.

Table 4

Minimized solutions for sufficient conditions for high vs. low referral.

Training	Competency	AIM	ORIC	No Role Overload	Outcome	Consistency	Coverage
●	●			●	100% Referring	0.92	0.46
○	●	●		○			
○	○		○		<100% Referring	0.94	0.77
	○			●			
	○		○	●			
○		○		○			
●	●						

Note: Role Overload is inverted; high indicates lack of role overload. ● indicates presence. ○ indicates absence.

Abbreviations. AIM: Acceptability of Intervention Measure. ORIC: Organizational Readiness for Implementing Change.