BJPsych Open (2019)
5, e71, 1–8. doi: 10.1192/bjo.2019.29

Experience of implementing new mental health indicators within information systems in six low- and middle-income countries

Shalini Ahuja, Charlotte Hanlon, Dan Chisholm, Maya Semrau, Dristy Gurung, Jibril Abdulmalik, James Mugisha, Ntokozo Mntambo, Fred Kigozi, Inge Petersen, Rahul Shidhaye, Nawaraj Upadhaya, Crick Lund, Sara Evans-Lacko, Graham Thornicroft, Oye Gureje and Mark Jordans

Background

Successful scale-up of integrated primary mental healthcare requires routine monitoring of key programme performance indicators. A consensus set of mental health indicators has been proposed but evidence on their use in routine settings is lacking.

Aims

To assess the acceptability, feasibility, perceived costs and sustainability of implementing indicators relating to integrated mental health service coverage in six South Asian (India, Nepal) and sub-Saharan African countries (Ethiopia, Nigeria, South Africa, Uganda).

Method

A qualitative study using semi-structured key informant interviews ($n = 128$) was conducted. The 'Performance of Routine Information Systems' framework served as the basis for a coding framework covering three main categories related to the performance of new tools introduced to collect data on mental health indicators: (1) technical; (2) organisation; and (3) behavioural determinants.

Results

Most mental health indicators were deemed relevant and potentially useful for improving care, and therefore acceptable to end users. Exceptions were indicators on functionality, cost and severity. The simplicity of the data-capturing formats contributed to the feasibility of using forms to generate data on mental health indicators. Health workers reported increasing confidence in their capacity to record the mental health data and minimal additional cost to initiate mental health reporting. However, overstretched primary care staff and the time-consuming reporting process affected perceived sustainability.

Conclusions

Use of the newly developed, contextually appropriate mental health indicators in health facilities providing primary care services was seen largely to be feasible in the six Emerald countries, mainly because of the simplicity of the forms and continued support in the design and implementation stage. However, approaches to implementation of new forms generating data on mental health indicators need to be customised to the specific health system context of different countries. Further work is needed to identify ways to utilise mental health data to monitor and improve the quality of mental health services.

Declaration of interest

None.

Keywords

Mental healthcare; indicators; primary healthcare; low- and middle-income settings; health information system; .

Within the area of mental health, there is a orld ide initiati e to e pand access to care by integrating mental health into primary healthcare.[1] Scale- p of any global health programme req ires ro tine monitoring of key indicators.[2] Member states of the World Health Organi ation (WHO) ha e committed to reporting and monitoring national-le el indicators for implementation of the global Mental Health Action Plan, 2013–2020.[3] Ho e er, most lo - and middle-income co ntries (LMICs) do not yet ha e adeq ate mental health indicators to monitor their in-co nty programmes.[4,5]

There is a pressing need to de elop e idence-based mental health indicators for local programme monitoring and to nderstand 'ho ' data on these indicators can be collected in ro tine LMIC settings.[6] The 'ho ' q estion can be addressed thro gh assessment of implementation of proced res to collect data on key mental health indicators, ith partic lar consideration of the acceptability to patients and conte t al feasibility.[7] Attending to the 'ho ' of implementation can tangibly impro e mental health ser ice monitoring and is cr cial for the iability of ongoing efforts to scale- p mental health ser ices in LMICs.[8]

Development of mental health indicators in Emerald programme

As part of the Emerald programme (Emerging Mental Health Systems in LMICs),[9] e established a set of key indicators for mental health programme monitoring, thro gh a Delphi process and thro gh b ilding consens s among a broad range of stakeholders across si LMICs: Ethiopia, India, Nepal, Nigeria, So th Africa and Uganda.[10] The final set of indicators co ered mental health ser ice tilisation for priority disorders, nmet needs of people ith mental health problems, the q ality of ser ices pro ided and the associated financial risk to the person and their family.

The selected indicators allo ed meas rement of key dimensions of ni ersal health co erage, incl ding the proportion of the target pop lation recei ing appropriate mental healthcare at district le el in the si Emerald co ntries. Implementation of mental health data collection forms at a primary care le el as e al ated q antitati ely to assess their tility and alidity.[11] In this st dy, e present findings from a q alitati e st dy aiming to e plore the acceptability, s stainability, feasibility and percei ed costs of implementing the ne mental health data collection forms in the conte t of integrated

Table 1 Mental health indicators and its implementation

Country	Tools capturing mental health indicators	Final list of indicators	Responsibility of data collection and data reporting
Ethiopia	Out-patient registration book	Service utilisation by disorder (psychosis, bipolar disorder, depression, alcohol use disorder, epilepsy, suicide attempt, other), severity, referral, essential medication stock-out	Mental health focal person in the health centre (general nurse or health officer)
South Africa	ROR, tick register/sheet. PC101 guides to screen patients, PRIME referral forms	Service utilisation by disorder (psychosis, bipolar disorder, depression, alcohol use disorder, epilepsy, suicide attempt, other), follow-up, referral	Healthcare providers complete, tick register and ROR and data is consolidated by the data-capturing personnel in the facility
Nepal	OPD register	Service utilisation by disorder (psychosis, depression, alcohol use disorders, suicidal attempt), severity, functioning, follow-ups, referrals, referred by, approximate time since the last appointment, payment for consultation and medical expenses, out-of-pocket costs	Health workers (prescribers) within the health posts
India	Screening register, case register, follow-up register, referral slips and smile cards	Service utilisation by disorder (psychosis, depression, alcohol use disorders, suicidal attempt, other), severity, referral, number of trained mental health professionals, medicines out of stock, readmissions	Nurses supervised by PRIME Case Managers for reporting
Uganda	Patient's medical form, patient registers	Service utilisation by disorder (psychosis, depression, alcohol use disorder, epilepsy, suicidal attempt, other), severity, referral, essential medication	Dedicated HMIS officer supervised by the facility manager
Nigeria	Patient's medical form, patient registers, OPD registers, summary forms	Service utilisation by disorder (psychosis, depression, alcohol use disorder, epilepsy, suicide attempt, other), severity, referral, essential medication stock-out, number of trained mental health professionals	Primary healthcare clinician; Clinic Records Officer; District (local government) Monitoring and Evaluation officer; with supervision from Emerald Programme Officer

ROR, Rationalization of Registers; PRIME, Programme for Improving Mental Health Care; OPD, Out-Patient Department; HMIS, health management information system.

primary mental healthcare services in the six Emerald countries. A pre-existing conceptual framework, the Performance of Routine Information System Management (PRISM) framework, was used to assess the performance of these indicators. The PRISM framework describes the inputs of health information systems as determinants affecting the process leading to better-quality health management information systems (HMISs).[12]

Method

Study design

A cross-country qualitative study was conducted with a framework approach. Semi-structured interviews were conducted with 128 key informants across the sites. A qualitative approach was used to achieve rich and detailed understanding of interviewees' points of view.[13]

Settings

The study was carried out in each of the six Emerald LMICs where a district-level mental healthcare plan was being scaled up to integrate mental health into primary care and reduce the treatment gap for priority disorders. Integration of mental health within primary care in Ethiopia, India, Nepal, Uganda and South Africa was led by the Programme for Improving Mental Health Care (PRIME),[14] and by the EuropeAid programme in Nigeria. The district mental healthcare plans have been described previously;[15] in brief, they included training of primary healthcare workers in the WHO's Mental Health Gap Action Programme[16] or PC101 (in South Africa)[17] for primary care workers, combined with community and health system interventions to support this task-sharing model of care. Once the district mental healthcare plans had been implemented and running for about 12 months, the new mental health indicators and forms (health facility *pro forma* available upon request) were introduced.

For this study, the term HMIS refers to a system of collecting, processing and analysing routine health data that already exists in the country's setting. At the primary care level in the six Emerald countries, the initial data collection component of the mental health information system is paper-based and managed by health workers (mostly nurses). However, the subsequent data compilation becomes electronic. At the district level and above, mental health data in India, Nepal, Nigeria and South Africa are compiled electronically. Ethiopia largely relies on paper forms; however, there are some instances where electronic HMISs have been piloted. Data collection in health facilities in all six countries is managed by health workers, most often nurses.

The final list of indicators, type of forms or registers used for data collection, and the focal person responsible for implementing the new forms in each of the six countries are described in Table 1. Before introducing the new procedures for collecting the indicators, strategies such as 2-day training courses for health workers/managers, demonstration sessions and monthly supervision visits were used. The new mental health indicators had already been implemented for 6–8 months before this qualitative study was conducted.

Sampling

Participants for interviews were identified and recruited based on their roles and responsibilities within primary healthcare facilities. Interviews were conducted with key informants, including health facility staff responsible for collecting mental health data (nurses, HMIS officers, record officers), clinicians, programme managers, facility heads/managers, supervisors and case managers in the study districts (Table 2).

Health managers and medical officers/clinicians from the PRIME scale-up facilities were approached separately. The health managers did not have any role in choosing the clinicians or *vice versa*. Those who consented were included in the interview. Interviews were kept confidential and anonymised.

Procedures and instruments

Data were collected in each of the six countries between February and August 2017. A semi-structured topic guide was developed in

Table 2 Study samples in each Emerald country site

	Health workers/ health records staff	Health managers/ programme managers/facility heads/medical officers	Supervisors/ case managers	Total respondents
Ethiopia	6	5	0	11
India	10	9	7	26
Nepal	22	2	4	28
Nigeria	15	15	6	36
South Africa	8	6	0	14
Uganda	3	10	0	13
Total				128

Table 3 Definitions of implementation outcomes assessed in this study

Implementation outcomes – definitions by Proctor *et al*[7]
Acceptability: Perception among implementation stakeholders that a given treatment, service, practice or innovation is agreeable, palatable or satisfactory
Sustainability: The extent to which a newly implemented treatment is maintained or institutionalised within a service setting's ongoing and stable operation
Feasibility/utility: The extent to which a new treatment or an innovation can be successfully used or carried out within a given agency or setting
Cost: The cost impact of an implementation effort

English and translated into the local lang ages here necessary (Ethiopia: Amharic; India: Hindi; Nepali; English as sed in Nigeria, So th Africa and Uganda) for se d ring the inter ie s. Back translations of the topic g ides ere not carried o t o ing to time constraints. The researchers car ing o t the inter ie s ere based at the site offices and ere main MS or PhD grad ates in p blic health/health management, p cholo or other related disciplines.

The topic g ide as based on a s bgro p of the k implementation o tcomes identified Proctor *et al*,[7] name acceptabilit, s stainabilit, feasibilit and cost. Definitions for each of these implementation o tcomes are depicted in Table 3. Pre io s de eloped monitoring and e al ation topic g ides from the MIND ME project (https:// .mhinno ation.net/inno ations/mind-me-africa) ere also referred for the de elopment of the topic g ides.[2]

Ethical considerations

Organisational and ethical permissions from the appropriate in- co nt institutions, as ell as cross-co nt appro al from King's College London and the WHO Instit tional Re ie Boards, ere obtained before approaching participants in each co nt. All participants pro ided informed consent.

Data analysis

Indi id al semi-str ct red inter ie s ere transcribed erbatim for the ana sis. Translations to English ere carried o t for inter ie s cond cted in local lang ages.

The data ana sis as nderpinned thematic ana sis principles.[18] The process started ith open coding, here initial descriptie codes ere applied to the data. These initial codes ere s bseq ent gro ped into broader categories, reflecting emerging common themes and nderpinning latent constr cts (parent themes). At this stage of the ana sis process it as noted that these parent themes corresponded ith the inp t domains o tlined in the PRISM concept al frame ork.[12] At this point, a decision as made to se a frame ork approach to proceed ith data ana sis,[19] ith the PRISM frame ork inp ts g iding s bseq ent ana sis. These inp ts, s mmarised as parent themes for this st d, ere categorised the PRISM frame ork into technical, organisational/en ironmental and beha io ral determinants. The PRISM frame ork also details elements ithin each of these inp ts; for this st d, these ere considered as s bthemes ithin the three parent themes (see Table 4 for an o er ie of the integrated frame ork).

An ana sis frame ork reflecting these parent themes and s bthemes as circ lated to co nt researchers (D.G., J.A., J.M., N.M., C.H., S.A.) a simple spreadsheet. This spreadsheet as s bseq ent pop lated ith data (a thor s mmaries, participant s mmaries and q otes) the co nt researchers. Final, these data ere s nthesised the lead researcher (S.A.).

Results

We first report findings on the technical factors to infl ence implementation of the ne mental health indicators. We then disc ss the role of organisational/en ironmental factors, presenting similarities and differences bet een the processes in each co nt. Final, e elaborate on the beha io ral components that emerged as enabling or hindering the integration of mental health data collection into prima care in the si co ntries.

The follo ing ana ses ere cond cted at co nt le el; ana sed data ere collated at cross-co nt le el and are described here to compare the similarities and differences across co ntries. Ho e er, here er necessary, cadre-specific responses are also highlighted in the section belo .

Technical influences

Inter ie ees in all co ntries percei ed that the ne mental health forms led to generation of mental health data making it easier to doc ment a patient's records. Across co ntries, for ma of the inter ie ees, this as the most significant achie ement of the programme. One of the programme coordinators in India reported:

> '*For the first time in 15 years we are getting some sort of monthly reports from districts and even from CHCs [community health centres]. The DMHP [District Mental Health Programme] is quite old in Sehore district and we have for the first time been able to build such data system.*' (ID-05, Madh a Pradesh, India).

Simila, in Ethiopia, a mental health focal person described the importance of mental health indicators in his health centre:

> *'We record on the register and follow up cases. For example, the guidelines state that the patients with epileptic seizures who take medications for 2 years should stop taking the medications if they do not show signs and symptoms of seizure and epilepsy anymore. So, to follow this up, it is necessary to record this on the register. In my opinion, in this regard the register is very good.'* (ID-01, Ethiopia).

Most inter ie ees in all si co ntries agreed that the ne indicators ere clear and ea to nderstand, and the e perienced impro ed acc ra of their reporting o er time, hich as part beca se of the familiari ith sing the form as an integral part of their ork. As per a respondent in So th Africa:

> *'The mental health referral form used in South Africa refers to a one-page form where nurses are expected to tick impression, diagnosis etc. Initially when the nurses first made use of the referral form, there were minor issues with completeness and*

Table 4 Parent themes and subthemes (based on PRISM framework)[7] and Proctor *et al*'s implementation outcomes

PRISM framework: input determinants and process description	Proctor *et al*'s implementation outcomes
Input determinants	Perceived acceptability
Technical factors	
Overall impression	
Accuracy	
Organisational factors	Perceived acceptability, feasibility, sustainability and cost
Governance and planning	
Availability of resources	
Training	
Feasibility	
Costs	
Importance to HMIS for mental health	
Supervision	
Integration with national HMIS	
Usability of these forms in future	
Behavioural factors	Perceived acceptability
Level of knowledge	
Competence and confidence levels for HMIS tasks	
Motivation	
Process description (Mental health indicators and implementation – refer to Table 1)	Not applicable
Tools used for HMIS	
Data collection	
Data processing and data analysis	
Use of information and feedback on HMIS to staff	

PRISM, Performance of Routine Information System Management; HMIS, health management information system.

> *accuracy of the form, e.g. nurses would tick "other" but would not provide a narrative. It has improved now.'* (ID-02, So th Africa).

Ho e er, despite the simplicity and familiarity ith the ne mental health forms, some respondents in India, Uganda, Nepal and So th Africa e pressed concerns abo t the additional time spent on filling o t the forms. For e ample, in Ethiopia, health orkers highlighted that the lo le el of literacy in the r ral pop lation lengthened the data-recording time. In Nigeria, health orkers s ggested that the recording time aried and e tended p to 20 min, again highlighting that this as often hen the patient as illiterate. One respondent at a health post in Nepal elaborated ho additional time for reporting mental health indicators as a major concern for them.

> *'Mental health reporting takes time but we do not have proper time, we cannot manage time according to the situation because so many patients are coming to the health post with so many types of disease, and for different types of service so that we have difficulty to manage proper time to record the information in this register. That is our problem.'* (ID-11, Nepal).

Respondents' ie s on the time b rden aried ith the kind of information the health orkers collected. Financial indicators on cost of medicine and o t-of-pocket e pendit re ere said to be partic larly diffic lt to collect by most respondents across co ntries. Some respondents referred to the sensiti ity of asking people to di lge information on financial indicators. In Ethiopia, infreq ently sed indicators s ch as alcohol se disorder ere fo nd to be less important, mainly beca se health centres are not a preferred point of contact for the management of s ch disorders. In Nepal and India, indicators on se erity of illness and f nctional assessment ere diffic lt to collect, as these indicators ere perceived to be more time-cons ming than others.

Respondents reflected on the iterations of the forms that occ rred d ring the initial phase of implementation. On one hand, some mental health system indicators ere dropped, b t on the other hand, certain additions ere made to the e isting list of indicators. For e ample, indicators on comorbidities ere added in Uganda, Nigeria and Ethiopia, and an indicator meas ring ' here patients are referred from' as added in Nepal based on the req irements of their health facilities. An indicator relating to the r ral/ rban di ide as added in Ethiopia beca se it as considered a key eq ity indicator by the Federal Ministry of Health. Incl sion of a 'history taking' indicator in the ne mental health forms as recommended in So th Africa beca se of its importance in diagnosing patients ith mental disorders.

In some co ntries, health s per isors and managers indicated that sing the ne mental health forms had impro ed their monitoring competencies. For e ample, health managers in So th Africa ere able to disseminate the findings from the ne mental health forms thro gh internal meetings. Similarly, in Uganda, a clinical officer reported their plans to compile mental health data at the end of the month and reflect pon it in health facility staff meetings. In three co ntries (Ethiopia, India and Nepal), there as no reported e idence to s pport se of data in impro ing services. Ho e er, in Nigeria, respondents ere optimistic abo t the sef lness of mental health data collected by these ne forms. In Nigeria, a respondent mentioned:

> *'After collating it per facility, you know that we can collate it monthly, we can collate it every three months, we can use it every 6 months, we need to know where the problem is, what the problem and where the problem is, so and we know how to address it, how we can fix it, then we know, ah! Then who are our main targets.'* (ID-02, Nigeria).

Correspondingly, in Uganda, a senior medical officer pointed o t the importance of ro tine mental health data for organisational planning:

> *'This information [from the Mental Health HMIS] will help us to plan well for patients with mental health problems in our hospital. Now we have a shortage of drugs and it is because the government is not really aware that these are conditions that are affecting its people.'* (ID-05, Uganda).

O erall, inter ie ees con ey ed that an impro ement in mental health reporting at the facility le el o ld enable better programme monitoring. This as a moti ation to contin e sing the indicators.

Organisational influences

Coordinating mechanisms within/across departments

A need to nderstand and acco nt for coordination iss es ithin/across departments as an acti e iss e in the implementation of the ne mental health forms, and as emphasised e plicitly by fo r o t of the si Emerald co ntries (Nepal, India, Ethiopia, So th Africa). In Nepal, the non-in ol ement of district officials dela ed implementation. As a health orker in Nepal pointed o t:

> *'[The] HMIS section focal person of the DPHO [district programme health officer] was not involved in our [implementation of Emerald forms] process, so it created difficulties in coordination. The DPHO are aware that they need to keep the record but no concrete mechanism/plan is in place to collect and store the record.'* (ID-07, Nepal).

Similarly, in India, nclear directi es from the state health directorate dela ed the allocation of mental health tasks, s ch as recording and co nselling for mental health patients, to the e isting

n rses/health orkers and created conf sion. In So th Africa, a lack of coordination bet een prescribers and non-prescribers made access to o t-patient department registers diffic lt, leading to infreq ent and incomplete reporting. Iss es also arose from parallel reporting s9stems in co ntries s ch as Ethiopia and India. N rses at the district-hospital le el in India sed the ne forms for reporting for the National Health Mission b t also contin ed reporting in parallel for the district metal health programme.

Resource demands in introducing mental health forms

Despite a strong sense of the importance of the ne forms, the additional time taken to incorporate this change ithin ro tine practice, b9 o erstretched health orkers, as e pressed b9 respondents in India, So th Africa, Nepal and Uganda. Health orkers collecting data mentioned that a ca se of delay9ed reporting as linked to the y9pe of illness, as people affected b9 certain mental disorders req ire longer cons ltation and reporting time. As described b9 a n rse in Uganda:

> '*The biggest challenges I face to finish my records is, now that it is after a long explanation that some people may realize that they have a condition.*' (ID-01, Uganda).

Often, concerns abo t a ailabil9 of space,[20] co nsellors (Uganda) and specialists,[20] and the time9 s pp9 of essential p s9chotropic dr gs (Ethiopia, India, Nepal, So th Africa, Uganda) had an indirect effect on reporting. Correspondingl9, proc rement of forms, registers and other basic administrati e iss es dela9ed the reporting in t o (So th Africa, India) o t of the si Emerald co ntries.

To strengthen the information s9stems for mental health, all co ntries e cept So th Africa tilised additional in-ser ice training of health orkers. F rther, training on mental health indicators of staff at higher organisational le els, s ch as ithin the Department of Health, ere s ggested in Uganda and Ethiopia.

In all si co ntries, the prima9 care facilities ere being r n b9 the go ernment. Minimal or no additional cost as anticipated in the initiation of mental health reporting. Health orkers in Uganda, Nepal, Nigeria, So th Africa and India, ho e er, anticipated additional printing costs. In Nepal, the additional h man reso rce costs of additional staff req ired for data reporting ere mentioned. In Ethiopia, respondents did not consider the minimal additional cost for introd cing mental health indicators to be prohibiti e, b t rather highlighted the importance of committing to s stain the scale- p initiati e.

To create a more s stainable en ironment for mental health reporting, all co ntries s ggested the need for s per ision for q al9 assessment and for moti ating non-specialist orkers to collect mental health data at prima9 care facilities. S ccess of the implementation of the ne data s9stem as attrib ted to the s per ision of health orkers thro gh Emerald re ie meetings in Uganda, case manager isits in India and reg lar re ie isits to complete o t-patient department registers in Ethiopia.

Integration of mental health indicators within routine information systems

In relation to the adoption of mental health indicators ithin the pre-e isting health information s9stems, all co nt9 respondents reported that integration as possible. The follo ing enabling factors for integration ere described: (a) the need to report on mental health data (all co ntries); (b) the simplic9 of the forms (Nigeria, Uganda); (c) red cing d plication b9 embedding into pre-io s reporting s9stems (India[20]) and (d) the perception that integration o ld increase demand of mental health ser ices (Nigeria).

At the time of data collection in Ethiopia, some mental health indicators (meas ring pre alence and treatment rates for beha io ral disorders, epilep s9 and other mental disorders) ere alread9 incl ded in the HMIS. Ho e er, more comprehensi e incl sion of mental disorders (e.g. to separate p s9chosis and depression) as considered important b9 respondents in Ethiopia. Three co ntries either did not report on the process of integration (So th Africa) or reported poor likelihood of complete integration (India, Nepal):

> *'Yes, it will be hard to integrate everything. We now have a different register and we can know what the case, whom we should call is. But if all of these go into the compiled register, then we have to distinguish the cases. There is a different register from the Government of Nepal for tuberculosis, leprosy, so if the register of mental health is made that way, then it can happen but compiling it together might be difficult.'* (ID-05, Nepal).

Similar to Nepal, some respondents from India percei ed partial integration to be feasible and others anticipated the need for alternati e strategies to achie e district-, state- and national-le el integration. For e ample, for district and other lo er le els of the health s9stem, training mod les for management of information s9stems and combined training needs ere reported to be prereq isites for adeq ate integration. Fo r o t of si co ntries (India, Nepal, Ethiopia, So th Africa) commented positi el9 ith regard to the sabil9 of the ne forms in the f t re. In Nepal and Ethiopia, health orkers percei ed that the ne data s9stem o ld be sef l for monitoring indi id al patient cases. In India, respondents sa the ne data s9stem as pro iding some baseline information on the co erage of mental health ser ices in the f t re.

Behavioural influences

The le el of kno ledge, competence, confidence and moti ation of health orkers ho ere implementing the health information s9stems ere all seen to affect the likelihood of implementation. Meas res s ch as on-the-job training of health orkers (all co ntries) and brief pamphlets for health pro iders to prompt the intervention (India,[20]) impro ed kno ledge on mental health indicators and their implementation. In terms of competen9, all co ntries reported self-s fficien9 o er the ne forms, hich o er time res lted in forming habits to complete them. T o o t of the si co ntries said th9 had a s9stem of reporting e en before act al ser ice deli er9 as initiated. In So th Africa, the confidence of healthcare pro iders increased ith the de elopment and a ailabil9 of reso rces s ch as the PC101 g ideline and referral forms. Ho e er, in Nepal and Uganda, health orkers demanded incenti es for the ne role. In Nigeria, e perience in implementing similar information s9stems for other programmes assisted in boosting confidence in implementing the ne forms:

> '*We are already used to routinely documenting patient records for other patients. For such [mental health] patients that just came to the hospital for the first time, we record …. [demographic data], their number is on it. So, when they come back, that small card helps us to fish out their main card. So basically, we have been very sure on how to complete the new forms.*' (ID-01, Nigeria).

Discussion

Overall findings

In this cross-co nt9 q alitati e st d9 cond cted in t o So th Asian and fo r s b-Saharan African co ntries, e e plored the e periences of front-line health orkers in implementing ne forms to generate data on mental health indicators for monitoring the scale- p of integrated mental health programmes in prima9 healthcare. We fo nd that there ere a n mber of barriers and

facilitators that affected implementation of the ne forms. Some of the facilitators and barriers o erlapped across the st died co ntries, hereas others did not. O erall, the ne indicators ere fo nd to be feasible in the primary care facilities.

O r res lts sho that barriers to meas ring ne mental health indicators related to the time cons med in recording some indicators (partic larly se erity of illness and f nctionality), o erstretched health orkers, poor coordination ithin and across departments and poor ser ice deli ery (o ing to lack of medication, space and co nsellors), hich indirectly affected data capt re. On the other hand, simplicity of the forms, moti ation and competence of health orkers and, to an e tent, percei ed se of mental health indicators for monitoring and programme management, ere reported as facilitators for better implementation o tcomes. Implementation strategies s ch as training co rses to assist initial se of ne forms and s per ision (sing ario s methods) to ens re contin ed se ere reported to be essential.

Vario s ne indicators de eloped in the co ntry sites ere reported to ha e contrib ted to mental health ser ice impro ement, s ch as indicators meas ring essential medication stock-o t in Ethiopia, India, Uganda and Nigeria; appro imate time since the last appointment in Nepal and n mber of trained mental health professionals in Nigeria and India (refer to Table 1).

Advancement from previous studies

The s ccessf l implementation of mental health indicators is dependent not only on the strength of e idence regarding the effecti eness of that indicator, b t is eq ally a f nction of its acceptability, feasibility and s stainability.[7] St dies s ch as that by Ndetei and Jenkins[8] ha e identified the need for ncon entional and inno ati e approaches to collect data on mental health indicators; for e ample, by tilising comm nity health orkers and primary and midcadre health orkforce. O r st dy has gone a step f rther by e ploring perspecti es on the se of forms generating data on mental health indicators by health orkers at a primary care le el, here mental health ser ices are being integrated. Fe st dies from high-income co ntry conte ts ha e reported e idence regarding the feasibility of implementing performance indicators for mental healthcare programmes,[21] and fe er still in lo er-income co ntry settings.[9] Pre io s e al ations of ro tine health information systems also do not pro ide insights on implementation o tcomes[22,23] and do not co er the specific domain of mental health indicators.

Understanding acceptability, feasibility and sustainability of introducing new forms

In o r st dy, across the si co ntries here the Emerald programme as implemented, mental health forms to capt re ne indicators ere accepted beca se of their simplicity and general satisfaction ith the content. Reported confidence and competence in completing ne mental health forms by participants f rther nderlined their acceptability. Therefore, the percei ed acceptability of the ne reporting system as high. Conte t al considerations are necessary in implementation and e al ation of information systems.[20,24] Based on conte t, certain co ntries in o r st dy tailored approaches by adding some indicators (on sociodemographics in Ethiopia, patient history in So th Africa and patient referrals in Nepal) and omitting others (indicators on cost in Ethiopia, Uganda, Nigeria and Nepal, and se erity in Nigeria and India).

As s ggested from other st dies and reports,[25,26] e ery health orker in o r st dy also nderstood the need for mental health information generated from ro tine informationsystems. Ho e er, st dy participants reported little (Uganda, Nigeria, So th Africa) to no (Ethiopia, India, Nepal) e idence on the se of information generated from the ne forms. Despite being a potentially cost-effecti e so rce of al able information, there is little e idence in the literat re on the reported se of HMISs.[27] More st dies are needed to in estigate the se of information to inform local planning. The learning health system approach tries to do this and is being tested in Nepal and Ethiopia as part of the OPAL (Optimi ing Pro ider Attit des and competence in Learning mental health systems) project,[28] and (in Ethiopia) thro gh the ASSET (health system strengthening in s b-Saharan Africa) project.[29]

Repeated meas res to nderstand acceptability and feasibility of information systems o er time can assist in impro ing their se for patient care and facility management. Jordans *et al* meas red tility of these mental health indicators by q antitati ely anal sing health records at t o time points d ring the implementation phase.[11] Nesting different assessment methods o er time can redefine barriers and refine implementation of data systems in mental health programmes.

The increased orkload res lting from completing the ne mental health forms presents another set of s stainability challenges, partic larly hen the same non-specialist staff are responsible for both task-shared mental health ser ice deli ery and completing patient records. For the system of mental health reporting to f nction, by-in from management staff is cr cial to ens re s stainability. Similar meas res ha e been s ggested for strengthening hospital-based mental health information systems in Ghana and So th Africa.[6,30]

O r st dy affirms the need for s per ision and acti e facilitation for inception and normalisation of the ne reporting process as ell as the se of ro tine data for local planning. This data can be sed for meas ring tilisation patterns o er time. Similarly, acc racy and o erall q ality of imm nisation records as seen to ha e been enhanced thro gh a diting and s per ision.[31]

All participants from the si co ntries s pported the idea of integration of mental health indicators ith other ro tine indicators, ith t o (India, Nepal) s ggesting partial integration. There is e tensi e e idence of integrating mental health into primary care, ith the aim of strengthening mental health information systems.[32] In a re ie by Ndetei and Jenkins, challenges and opport nities ere identified in linking mental health data systems to other data systems and *vice versa* for better clinical and o erall o tcomes.[8] Ho e er, there is no clear e idence on integrating mental health indicators ithin ro tine information systems. Therefore, f rther meas res are needed to assess the feasibility of integrating all data systems at the primary care le el on a large scale, to estimate their cost and other system implications and to e al ate hether integration impro es data q ality and sage at primary care le el.

Study limitations

This st dy has se eral limitations. First, as this as a q alitati e st dy, e are reporting on the perceptions of respondents ith respect to the implementation of the ne mental health forms. Nonetheless, the more in-depth nderstanding that as possible complements the more representati e findings obtained from q antitati e approaches.[11] Second, there may ha e been nested social desirability bias considering that respondents ere s ally being inter ie ed at their place of ork. More objecti e approaches, incl ding participant obser ation, co ld ha e red ced social desirability bias. Third, a cross-co ntry researcher anal sed a synthesised spreadsheet de eloped by co ntry researchers. Altho gh q ality checks of e ternal re ie ing ere p t in place, some of the local n ances may not ha e been capt red.

In concl sion, in this q alitati e st dy e ploring the se of ne mental health indicators in primary care facilities across si LMICs, the ie s of respondents from the different co ntries ere mi ed. Barriers to implementation across settings ere related to the

time taken to complete indicators meas ring the f nctionalit9 and s9mptom se erit9 of people diagnosed ith mental disorders. Ho e er, the simplicit9 of the ne data collection method, competence and moti ation of health orkers in completing the ne forms, and the appreciation that the ne s9stem held al e and tilit9, ere factors s pporting implementation of the ne s9stem. There is a pressing need to integrate mental health indicators into ro tine health information s9stems. E en so, f rther research is needed to e amine the s stainabilit9 of this integration and to find s9s to s pport the se of mental health ser ice data to impro e the reach and q alit9 of care.

Shalini Ahuja, PhD, Researcher, Centre for Global Mental Health, Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK; **Charlotte Hanlon**, PhD, Reader, Centre for Global Mental Health, Institute of Psychiatry, Psychology and Neuroscience, King's College London; and Department of Psychiatry, School of Medicine, College of Health Sciences, Addis Ababa University, Ethiopia; **Dan Chisholm**, PhD, Programme Manager, Department of Mental Health and Substance Abuse, World Health Organization, Switzerland; **Maya Semrau**, PhD, Research Fellow, Global Health and Infection Department, Brighton & Sussex Medical School, UK; and Centre for Global Mental Health, Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK; **Dristy Gurung**, MA, Researcher and Programme Coordinator, Transcultural Psychosocial Organization, Nepal; **Jibril Abdulmalik**, MD, Researcher, Department of Psychiatry, University of Ibadan, Nigeria; **James Mugisha**, MD, Researcher, Kyambogo University; and Butabika National Referral and Teaching Mental Hospital, Uganda; **Ntokozo Mntambo**, MA, Researcher, School of Applied Human Sciences, University of Kwazulu-Natal, South Africa; **Fred Kigozi**, MD, Senior Researcher, Butabika National Referral and Teaching Mental Hospital, Uganda; **Inge Petersen**, PhD, Research Director and Professor, Centre for Rural Health, School of Nursing and Public Health, University of Kwazulu-Natal, South Africa; **Rahul Shidhaye**, PhD, Senior Researcher, Centre for Mental Health, Public Health Foundation of India, India; **Nawaraj Upadhaya**, MA, Researcher, Transcultural Psychosocial Organization, Nepal; **Crick Lund**, PhD, Professor, Alan J Flisher Centre for Public Mental Health, Department of Psychiatry and Mental Health, University of Cape Town, South Africa; and Centre for Global Mental Health, Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK; **Sara Evans-Lacko**, PhD, Associate Professorial Research Fellow, Personal Social Services Research Unit, London School of Economics and Political Science; and Centre for Global Mental Health, Institute of Psychiatry, Psychology & Neuroscience, King's College London, UK; **Graham Thornicroft**, PhD, Professor of Community Psychiatry, Centre for Global Mental Health and Centre for Implementation Science, Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK; **Oye Gureje**, PhD, Professor of Psychiatry and Director, WHO Collaborating Centre for Research and Training in Mental Health, Neurosciences and Substance Abuse, Department of Psychiatry, University of Ibadan, Nigeria; and Professor Extraordinary, Department of Psychiatry, Stellenbosch University, South Africa; **Mark Jordans**, PhD, Reader, Centre for Global Mental Health, Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK

Correspondence: Shalini Ahuja, King's College London, Institute of Psychiatry, Psychology and Neuroscience, 16 De Crespigny Park, Camberwell, London SE5 8AF, UK. Email: shalini.ahuja@kcl.ac.uk

First received 28 Aug 2018, final revision 8 Apr 2019, accepted 18 Apr 2019

Acknowledgements

We thank Petra Gronholm for her contribution to the brainstorming on the methodology of the study and Grace Ryan and project MIND ME for their assistance in the development of the qualitative tool used for this study.

Funding

S.A. is supported by Emerald project, funded under the European Commission's Seventh Framework programmes. S.A. acknowledges the financial support from the Psychiatric Research Trust and the National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care South London at King's College London NHS Foundation Trust. This study is supported by the European Union Seventh Framework Programme (FP7/2007–2013) Emerald project. G.T. is supported by the NIHR Collaboration for Leadership in Applied Health Research and Care (CLAHRC) South London and by the NIHR Applied Research Centre (ARC) at King's College London NHS Foundation Trust, and the NIHR Applied Research and the NIHR Asset Global Health Unit award. The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health and Social Care. G.T. receives support from the National Institute of Mental Health of the National Institutes of Health under award number R01MH100470 (Cobalt study). G.T. is supported by the UK Medical Research Council in relation the Emilia (MR/S001255/1) and Indigo Partnership (MR/R023697/1) awards. D.C. is a staff member of the World Health Organization. The authors alone are responsible for the views expressed in this publication and they do not necessarily represent the decisions, policy or views of the World Health Organization. M.S. is supported by the NIHR Global Health Research Unit for Neglected Tropical Diseases at the Brighton and Sussex Medical School. G.T., C.H., I.P. and C.L. are funded by the NIHR Global Health Research Unit on Health System Strengthening in Sub-Saharan Africa, King's College London (GHRU 16/136/54) using UK aid from the UK Government. The views expressed in this publication are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care. C.H. additionally receives support from AMARI as part of the DELTAS Africa Initiative (DEL-15-01).

References

1 Delaney RK, Cooper LJ, Nshemerewire S. The practice of child mental health nurses. In: *IACAPAP e-Textbook of Child and Adolescent Mental Health*. Geneva: International Association for Child and Adolescent Psychiatry and Allied Professions, 2018.

2 Ryan G, De Silva M, Terver JS, Ochi OP, Eaton J. Information systems for global mental health. *Lancet Psychiatry* 2015; **2**(5): 372–3.

3 World Health Organization (WHO). *Mental Health Action Plan 2013–2020*. WHO, 2013 (https://www.who.int/mental_health/publications/action_plan/en/).

4 Upadhaya N, Jordans MJ, Abdulmalik J, Ahuja S, Alem A, Hanlon C, et al. Information systems for mental health in six low and middle income countries: cross country situation analysis. *Int J Ment Health Syst* 2016; **10**: 60.

5 Gururaj G, Benegal V, Rao G, Pathak K, Singh L, Mehta R, et al. *National Mental Health Survey of India, 2015–16: Prevalence, patterns and outcomes*. National Institute of Mental Health and Neuro Sciences, NIMHANS, Publication No. 129. 2016.

6 Ahuja S, Shidhaye R, Semrau M, Thornicroft G, Jordans M. Mental health information systems in resource-challenged countries: experiences from India. *Br J Psyhchiatry Int* 2018; **15**(2): 43–6.

7 Proctor E, Silmere H, Raghavan R, Hovmand P, Aarons G, Bunger A, et al. Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda. *Adm Policy Ment Health* 2011; **38**(2): 65–76.

8 Ndetei D, Jenkins R. The implementation of mental health information systems in developing countries: Challenges and opportunities. *Epidemiologia e Psichiatria Sociale* 2009; **18**: 12–16.

9 Semrau M, Evans-Lacko S, Alem A, Ayuso-Mateos JL, Chisholm D, Gureje O, et al. Strengthening mental health systems in low- and middle-income countries: the Emerald programme. *BMC Med* 2015; **13**: 79.

10 Jordans MJ, Chisholm D, Semrau M, Upadhaya N, Abdulmalik J, Ahuja S, et al. Indicators for routine monitoring of effective mental healthcare coverage in low- and middle-income settings: a Delphi study. *Health Policy Plann* 2016; **31**(8): 1100–6.

11 Jordans M, Chishlom D, Semrau M, Gurung D, Abdulmalik J, Ahuja S, et al. Evaluation of performance and perceived utility of mental healthcare indicators in routine health information systems in five low- and middle-income countries. *BJPsych Open* 2019, this issue.

12 Aqil A, Lippeveld T, Hozumi D. PRISM framework: a paradigm shift for designing, strengthening and evaluating routine health information systems. *Health Policy Plann* 2009; **24**(3): 217–28.

13 Bryman A. *Social Research Methods*. Oxford University Press, 2012.

14 Lund C, Tomlinson M, De Silva M, Fekadu A, Shidhaye R, Jordans M, et al. PRIME: a programme to reduce the treatment gap for mental disorders in five low- and middle-income countries. *PLoS Med* 2012; **9**(12): e1001359.

15 Hanlon C, Fekadu A, Jordans M, Kigozi F, Petersen I, Shidhaye R, et al. District mental healthcare plans for five low-and middle-income countries: Commonalities, variations and evidence gaps. *Br J Psychiatry* 2018; **208**(s56): s47–s54.

16 World Health Organization (WHO). *mhGAP Mental Health Gap Action Programme: Scaling Up Care for Mental, Neurological, and Substance Use Disorders*. WHO, 2008 (https://www.who.int/mental_health/evidence/mhGAP/en/).

17 Petersen I, Fairall L, Bhana A, Kathree T, Selohilwe O, Brooke-Sumner C, et al. Integrating mental health into chronic care in South Africa: the development of a district mental healthcare plan. *Br J Psychiatry* 2016; **208**(Suppl 56): s29–39.

18 Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* 2006; **3**(2): 77–101.

19 Gale KN, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Medl Res Methodology* 2013; **13**: 117.

20 Ministry of Health and Family Welfare, Government of India. *New Pathways New Hope: National Mental Health Policy of India 2014*. Ministry of Health and Family Welfare, 2014 (https://www.nhp.gov.in/sites/default/files/pdf/national%20mental%20health%20policy%20of%20india%202014.pdf).

21 Lauriks S, Buster MC, de Wit MA, Arah OA, Klazinga NS. Performance indicators for public mental healthcare: a systematic international inventory. *BMC Public Health* 2012; **12**: 214.

22 Hotchkiss D, Aqil A, Lippeveld T, Mukooyo E. Evaluation of the performance of routine information system management (PRISM) framework: evidence from Uganda. *BMC Health Serv Res* 2010; **10**: 188.

23 Odhiambo-Otieno GW. Evaluation of existing district health management information systems a case study of the district health systems in Kenya. *Int J Med Inform* 2005; **74**(9): 733–44.

24 Eslami A, Scheepers H, Rajendran D, Sohal A. Health information systems evaluation frameworks: a systematic review. *Int J Med Inform* 2017; **97**: 195–209.

25 Zwaanswijk M, Verheij RA, Wiesman FJ, Friele RD. Benefits and problems of electronic information exchange as perceived by health care professionals: an interview study. *BMC Health Serv Res* 2011; **11**: 256.

26 World Health Organization (WHO). *Mental Health Information Systems*. WHO, 2005 (https://www.who.int/mental_health/policy/mnh_info_sys.pdf).

27 World Health Organization (WHO). *Framework and Standards for Country Health Information Systems* (2nd edn). WHO, 2012 (https://www.who.int/healthinfo/country_monitoring_evaluation/who-hmn-framework-standards-chi.pdf).

28 Duke Global Health Institute. *OPAL - Optimizing Provider Attitudes and Competence in Learning Mental Health Systems*. Duke Global Health Institute, 2017 (https://globalhealth.duke.edu/projects/opal-optimizing-provider-attitudes-and-competence-learning-mental-health-systems).

29 National Institute for Health Research (NIHR). *ASSEST: Health System Strengthening in Sub-Saharan Africa*. NIHR, 2017 (https://www.healthasset.org).

30 Kpobi L, Swartz L, Ofori-Atta AL. Challenges in the use of the mental health information system in a resource-limited setting: lessons from Ghana. *BMC Health Serv Res* 2018; **18**(1): 98.

31 Capblanch X, Ronveaux O, Doyle V, Remedios V, Bchir A. Accuracy and quality of immunization information systems in forty-one low income countries. *Trop Med Int Health* 2009; **14**(1): 2–10.

32 Upadhaya N, Jordans MJD, Pokhrel R, Gurung D, Adhikari RP, Petersen I, et al. Current situations and future directions for mental health system governance in Nepal: findings from a qualitative study. *Int J Ment Health Syst* 2017; **11**: 37.