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A Survey of **Mental Health Research Priorities in Low- and Middle-Income Countries of Africa, Asia, and Latin America and the Caribbean**

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## **Abstract**

**Background:** Studies suggest a paucity of and lack of prioritization in mental health research output from low- and middle-income (LAMI) countries.

**Aims:** To investigate research priorities in mental health among researchers and other stakeholders in LAMI countries.

**Method:** A two-stage design that included enumeration (through literature searches and snowball technique) of researchers and stakeholders in 114 countries of Africa, Asia and Latin America and the Caribbean; and a mail survey on priority research.

**Results:** The study revealed broad agreement between researchers and stakeholders and across regions regarding the priorities for mental health research, however, stakeholders did not consider researchers' personal interest as an important criterion for prioritizing research. Studies on epidemiology (burden and risk factors), health systems, and social science were the highest ranked types of needed research. The three prioritized disorders were depression/anxiety, substance use disorders, and psychoses, while prioritized population groups were children and adolescents, women, and persons exposed to violence/trauma. Important criteria for prioritizing research were burden of disease, social justice, and availability of funds. Researchers' and stakeholders' priorities were largely consistent with burden of disease estimates (however, suicide was under-prioritized) and partly congruent with the research projects of the responding researchers.

**Conclusions:** The broad agreement found between a large and reasonably representative group of active researchers and stakeholders provides a basis for generating policy and service relevant evidence for global mental health.

### **Declaration of interest statement:**

Dr Pratap Sharan has received a research grant as a Principal Investigator from Eli Lilly after completion of the "Mental Health: Mapping of Research Capacity in Low- and Middle-Income Countries" project. However, he has not been employed by, has not served as consultant with, and does not share ownership in any organization whose interests, financial or otherwise, may affect the publication of the paper.

The other authors declare that they have no conflicts of interest.

## **Introduction**

Health research can contribute to advancement of science, provision of solutions for health problems and to growth, development, equity, global security and the fight against poverty.<sup>1,2</sup> Unfortunately, health research is beset with the '10/90 gap'.<sup>3-6</sup> The paucity of and the geographic variation in mental health research output,<sup>7-11</sup> is compounded by the fact that mental health research in low- and middle-income (LAMI) countries often does not address priority issues suggested by needs or recommended by national institutions.<sup>12,13</sup> This is a serious lacuna because prioritization of mental health research is a critical component in the process of scaling up of services for mental health.<sup>2,14</sup>

Until recently, the dominant model of research priority setting was driven by criteria such as novelty of proposed research, attractiveness of research results and potential for publication in high-impact journals, interests of donors and advocacy groups, individual biases of the members of policy-making panels, and media exposure.<sup>15,16</sup> Two types of explicit methods for priority setting – based on indicators of needs (e.g. burden) and values (opinion of experts/stakeholders) have been detailed.<sup>16,17</sup> However, composite indicators of need have gained prominence in the research priority-setting process because these measures, e.g. disability adjusted life-years (DALY) lend themselves to comparisons across a broad range of diseases and economic analyses of interventions.<sup>18</sup> Although such indicators are useful for rational resource allocation, involvement of a wide range of stakeholders is considered essential for ensuring legitimacy and fairness of the priority setting decisions in health research investments.<sup>19,20</sup> Participation of a broad spectrum of stakeholders helps to identify research needs, technical and financial capabilities, information gaps and distortions, the political environment, and the values and ethics of a given society; and it fosters ownership of the process and output of priority setting initiatives, and facilitates shared responsibility and accountability in the implementation of the research agenda.<sup>19,21,22</sup>

During the past decade, a number of LAMI countries have conducted priority setting exercises that have successfully involved stakeholders to identify priority research issues in health, health systems and health policy.<sup>22</sup> However; these have mostly involved single countries and have not addressed priorities in mental health research. The present study was undertaken to address the lack of evidence concerning global and regional stakeholder priorities in mental health research in LAMI countries.

## **Methods**

The survey questions reported on here were part of a larger study "Mental Health: Mapping of Research Capacity in Low- and Middle-Income Countries" that aimed to develop regional maps of mental health researchers, and detail their research agenda and the research infrastructure (institutional, funding, policy on research, etc.) that supports them.<sup>23</sup> This is the first article from that study and it is based on the section on priorities for mental health research.

The Global Forum issued a "Request for Proposals" that was distributed widely through a combination of electronic and postal methods to universities, research institutions and individuals in LAMI countries of Africa, Asia and Latin America and the Caribbean (henceforth termed the Americas). LAMI countries of Europe and the Middle East were not included. Six out of 18

distinct proposals (two from each region) were selected based on their scope (the extent to which they met the broad goals of the project) and the capabilities of the teams. Further project development occurred with coordination and support from Global Forum and World Health Organization (WHO), so the six teams addressed some common issues. A standardization workshop with project leaders (Global Forum, WHO and the six principal investigators) was conducted to agree on the common issues and the methods to approach them, e.g. the databases to be used, the time frame for the search for the enumeration of researchers, the documents and networks to be tapped to enumerate stakeholders, a shared understanding of terms and definitions use to help the teams in supporting their members and respondents who sought clarifications. A total of 114 LAMI countries from Africa (52), the Americas (30) and Asia (32) constituted the study universe (see Sharan et al, for the list of countries).<sup>23</sup>

Researchers were enumerated through a search of indexed (Medline and PsycInfo) and non-indexed literature (regional databases, online journals, other local journals, unpublished papers, presentations, and reports) for a 5-year period (1999 to 2003) for mega countries (population >100 million) and for a 10-year period (1993 to 2003) for less populated countries. All authors whose addresses could be identified in the literature search were invited by mail or e-mail to participate in this survey. Stakeholders were identified through websites and reports of organizations and associations, journals, regional databases, grey literature searches, ministries of health documents and snowball technique. Stakeholders included: (i) decision makers (legislators and officers of ministries of health, health insurance agencies, foundations, and research councils), (ii) university administrators, and (iii) officers of associations (office bearers of professionals associations, non-governmental organizations, and associations of users and carers). Survey respondents' addresses were obtained through local directories (e.g., professional organizations), resources like Google™ Scholar, and correspondence with affiliated institutions and colleagues.

The overall design of the postal survey was as follows: a letter of announcement was sent to explain the rationale of the study, and inform potential respondents about availability of choice in response formats (electronic- or paper-based) and confidentiality. One week later the questionnaire and a pre-addressed return envelope or information about the website where the questionnaire was available was sent. Non-respondents were sent up to four reminders (including a copy of the questionnaire) at 2-4 weeks intervals. The questionnaires could be answered in English or other international languages.

The draft questionnaire was developed by a core group (public health professionals of WHO and Global Forum with knowledge of mental health, health research priority setting, and health economics; and experience of working in and for LAMI countries) that compiled an initial list of items within the broad health research system framework.<sup>24</sup> The options related to questions on priority were adapted from various sources: an unpublished WHO questionnaire on mental health research (critiqued by 12 public mental health experts from WHO, LAMI and high-income countries); a WHO-Research Policy and Cooperation study on health research in LAMI countries,<sup>3</sup> and an Australian study on research priorities in mental health.<sup>16</sup> This questionnaire was discussed in detail in the standardization meeting by the regional principal investigators (mental health professionals from diverse backgrounds with extensive experience of working in LAMI and high-income countries) who identified omitted issues and finalized the questionnaire.

The section on mental health research priorities began with the question -- “Over the next 5 years, what in your opinion are the most important mental health research priorities in your country?”

Respondents were requested to indicate the top three for each of the following categories of research priorities by marking multiple choice boxes:

**Type of mental health research:** Epidemiological studies of burden and risk factors; health systems research (e.g., services evaluation, policy and economic studies); social science research (e.g., illness beliefs, measurement); clinical trials; and basic sciences research (e.g., genetics and neuro-imaging).

**Mental disorders/conditions:** Depression/anxiety, substance use disorders, psychoses, disorders with onset in childhood and adolescence, suicide, dementia, personality disorders, learning disorders, epilepsy, eating disorders, others.

**Specific populations:** Children and adolescents, women, persons exposed to violence/trauma, the poor, elderly persons, disabled persons, minorities, refugees, prisoners, others.

**Criteria for prioritizing:** Burden of disease in the population, availability of funds, researchers’ personal interests, policy-maker request, social justice/equity and others.

The findings of the study were compared with two external (hard) indices that were available for the same countries: projects conducted by responding researchers,<sup>23</sup> and the burden of neuropsychiatric diseases.<sup>25</sup> As a part of the larger study (Mental Health: Mapping of Research Capacity in Low- and Middle-Income Countries) each researcher had to tick multiple choice boxes (with the same response options as in the survey on priorities) regarding the type of research, its focus on disorders and specific populations, and the motivation(s) for conducting the research; for three research projects carried out in the last 5 years (n=1847 projects).<sup>23</sup> Though questions on the project preceded those on priorities, it was possible that researchers might have selectively reported projects that matched their subjective priorities. To check on this possibility, we compared the ranking of various response categories in the projects with the ranking of similar categories in indexed publications (Pubmed and PsycInfo, n=2397) from the same countries in one region (the Americas).<sup>23</sup> The ranking for types of research, disorders, and specific populations was found to be identical (data available from the authors on request); suggesting that researchers had been reasonably objective in reporting on their projects.

The table on estimated total disability adjusted life years by cause and member states (December 2004 estimates) was used to compile the burden of 6 relevant neuropsychiatric categories for 111 of the 114 countries: depression/anxiety (unipolar depressive disorders, post-traumatic stress disorder, obsessive-compulsive disorder, panic disorder), substance use disorders (alcohol use disorders, drug use disorders), self-inflicted injury (including suicide), psychosis (schizophrenia), dementia (Alzheimer and other dementias), and epilepsy.<sup>25</sup>

The study methodology was approved by the Institutional Review Boards of the respective teams. No formal ethical approval was required in the Philippines because the ‘Official and Formal Ethical Board’ was not in existence during the conduct of the study. A formal ethical approval was also not required in Nigeria at the time of the study.

## **Results**

No mental health researcher was identified in 31 of the 114 (27.2%) countries and fewer than six researchers were identified in another 26 countries (22.8%). Almost one third of the 4633

identified mental health researchers resided in China, India and Brazil. The overall response rate was 21.1% (Africa: 34.2%, Asia: 13.3%, the Americas: 31%) and responses were received from researchers residing in 53 countries (46.5% of 114 countries and 71.9% of countries with more than 5 identified researchers). The largest number of responses was received from Brazil (227) and India (125). Three fifths of respondents were male. The average age of respondents was 45.4±9.5 years. All major disciplines of mental health (psychiatry 47%, nursing 18.3%, psychology 12.4%, social sciences 8.6%, neurology and other medical disciplines 12.4%, public health 3.9%) and institutional affiliations (government/ministry 56.7%, private sector 30%, universities 22.3%, research organizations 12.2%, non government sector 7.3%) were represented (multiple responses were permitted).

No stakeholder was identified in 22 (19.3%) countries. A total of 3829 stakeholders were identified (decision makers 22%; association officers 49%; university administrators 29%). The overall response rate for the stakeholder group was 10.1% (Africa 12.8%; Asia 8.9%, the Americas 12%). Decision makers from 31 countries (27.2%), university administrators from 24 countries (21.1%) and association officers from 37 countries (32.5%) responded. Stakeholders from the following countries formed more than 10% of the total pool of respondents in each stakeholder group: decision makers - Brazil (17.1%) and Peru (10.5%); university administrators - Brazil (12%) and Colombia (12%); and association officers - Philippines (18%) and India (17%).

Tables 1 to 4 show the percentage of the sample of researchers and stakeholders which rated various response options as among the top three in priority. In addition, each of these tables show the percentage of research projects (conducted by the responding researchers) that were related to the same response categories as the subjective priorities.

### ***Comparison between stated priorities of researchers and stakeholders***

At the global level, researchers and stakeholders were consistent in their ranking of research priorities by type of research. They considered epidemiological studies of burden and risk factors the most important type followed by health systems research, social science research, clinical trials, and basic science research (see Table 1). A 2-position (or greater) difference in ranks between researchers' and stakeholders' opinion was observed for 1 out of 15 intra-regional (in Africa) and 2 out of 30 inter-regional (both between stakeholders) comparisons.

|Table 1 about here |

The ranking of research priorities in terms of types of mental disorders was also largely consistent across the researcher and stakeholder groups at the global level (see Table 2). Depression/anxiety, substance use disorders, psychosis, and disorders with onset in childhood and adolescence held the first four positions. A 2-position (or greater) difference in ranks was observed for two conditions at the global level; 7 out of 30 intra-regional (3 each in Africa and the Americas, and 1 in Asia) and 17 out of 60 inter-regional comparisons (7 for researchers and 10 for stakeholders). None of these differences were regarding the top four ranked conditions. Large intra-regional differences (3-position or greater) between researchers and stakeholders were noted for suicide (researchers gave it a higher rank in Africa and stakeholders gave it a higher rank in the Americas) and dementia (researchers gave it a higher rank in the Americas; however the percentage difference between the groups was small). Large inter-regional differences were noted for suicide



(researchers in the Americas and stakeholders in Africa gave it a low rank), dementia (researchers in Africa and stakeholders in the Americas gave it a low rank), personality issues (stakeholders in Asia gave it a low rank) and epilepsy (stakeholders in Africa gave it a high rank).

|Table 2 about here |

As Table 3 indicates, researcher and stakeholder groups were again largely consistent in their ranking of research priorities in terms of specific populations at the global level. Children and adolescents, women, persons exposed to violence/trauma, the poor and the elderly were considered the top five priorities. A 2-position (or greater) difference in ranks was observed for 6 out of 27 intra-regional (1 in Africa, 2 in Asia and 3 in Latin America) and 20 out of 54 inter-regional comparisons (6 for researchers and 14 for stakeholders). Large intra-regional differences (3-point or more) in ranks between researchers and stakeholders were noted for persons affected by violence/ trauma in Asia (stakeholders gave it a higher rank). Large inter-regional differences were noted for persons affected by violence/ trauma (researchers in Asia gave it a low rank) and disability (stakeholders in the Americas gave it a low rank).

|Table 3 about here |

Finally, four of the five criteria for prioritizing mental health research were ranked in a similar order by researchers and stakeholders at the global level: burden of disease, social justice, availability of funds, and specific requests made by policy-makers' (see Table 4). A 2-position (or greater) difference in ranks was observed for 5 out of 15 intra-regional comparisons (2 each in Africa and Asia and 1 in the Americas) but none of the 30 inter-regional comparisons. Researchers and stakeholders differed markedly in the rank accorded to researchers' personal interest at the global level (researchers: second rank, stakeholders: fifth rank) and in each region.

|Table 4 about here |

### ***Comparison with external indices***

#### Research projects conducted by researchers

At the global level a 2-position (or greater) difference in ranks between researchers' priorities and research projects; and stakeholders' priorities and research projects was observed for none of the 10 comparisons for types of research, 7 out of 20 comparisons for disorders (3 for researchers, 4 for stakeholders), 10 out of 18 comparisons for specific populations (5 each for researchers and stakeholders), and 1 out of 8 comparisons for criteria for prioritizing research (1 for stakeholders) (Tables 1-4). A 2-position difference in ranks was not observed for the disorders and specific populations that received high (first three) or low (last two) ranks. A large (3-position or greater) difference in ranks was observed for dementia (lower rank in stakeholders' opinion in comparison to research projects), personality issues (higher rank in researchers' opinion in comparison to research projects) and learning disorders (higher rank in researchers' opinion in comparison to research projects) (Table 2); persons affected by poverty (higher rank in researchers' and stakeholders' opinions in comparison to research projects) (Table 3), and personal interest of researchers as a criterion for prioritizing research (lower rank in stakeholders' opinion in comparison to research projects) (Table 4).

In intra-regional comparisons, a 2-pointsition (or greater) difference in ranks was observed for 1

out of 30 comparisons for types of research (1 for researchers), 12 out of 60 comparisons for disorders (5 for researchers, 7 for stakeholders), 24 out of 54 comparisons for specific populations (11 for researchers, 13 for stakeholders), and 6 out of 24 comparisons for criteria for prioritizing research (1 for researchers and 5 for stakeholders) (Table 1-4). A 3-position (or greater) difference in ranks in comparison to projects was observed for research on suicide in Africa (lower rank in stakeholders' opinion in comparison to research projects); personality issues in Asia (lower rank in stakeholders' opinion in comparison to research projects), and suicide (lower rank in researchers' opinion in comparison to research projects), dementia (lower rank in stakeholders' opinion in comparison to research projects) and learning disorders (higher rank in researchers' and stakeholders' opinion in comparison to research projects) in the Americas (Table 2). A 3-position (or greater) difference in ranks was also observed for research on persons affected by poverty (higher rank in researchers' and stakeholders' opinion in comparison to research projects) and minorities (lower rank in researchers' and stakeholders' opinion in comparison to research projects) in Africa; persons affected by violence / trauma (higher rank in stakeholders' opinion in comparison to research projects), poor (higher rank in researchers' and stakeholders' opinion in comparison to research projects), elderly (higher rank in researchers' opinion in comparison to research projects), disabled (lower rank in researchers' and stakeholders' opinion in comparison to research projects), minorities (lower rank in stakeholders' opinion in comparison to research projects), and prisoners (lower rank in stakeholders' opinion in comparison to research projects) in Asia; and the poor (higher rank in researchers' and stakeholders' opinion in comparison to research projects) and disabled (lower rank in stakeholders' opinion in comparison to research projects) in the Americas. A difference of similar magnitude was also observed for personal interest of researchers as a criterion for prioritizing research (lower rank in stakeholders' opinion in comparison to research projects) in Asia and the Americas.

#### Burden of neuropsychiatric diseases

A comparison of researchers' and stakeholders' opinion on research priorities with burden of disease estimates for the concerned countries showed a broad similarity in ranking (Table 5). At the global level, a 2-position difference in ranking was seen for suicide and dementia with the researchers ranking the former lower and the latter higher than their respective ranks according to burden of disease estimates. However, the percent difference between researchers and stakeholders was small in the case of dementia. A 2-position difference in ranks was observed for 8 out of 36 comparisons at the intra-regional level.

|Table 5 about here |

## **Discussion**

### ***Global mental health research priorities***

The study revealed broad agreement between researchers and stakeholders and across regions regarding the priorities for mental health research in LAMI countries. The three highest ranked types of research were: epidemiological studies of burden and risk factors, health systems research, and social science research. The three priority mental disorders/conditions were depression/anxiety, substance use disorders, and psychoses, and the three population groups that were prioritized were children and adolescents, women, and persons exposed to violence/trauma.

The three highest ranked criteria for prioritizing research were burden of disease, social justice and availability of funds. The similarities found in priorities between researchers and stakeholders and across regions raise genuine hopes of making research an instrument for change via collaboration among LAMI countries, researchers and stakeholders.

Researchers and stakeholders accorded epidemiological studies of burden and risk factors and health systems research the highest ranks on types of needed research. Eight of the 12 research options that received the highest priority scores from the Lancet Global Mental Health Group addressed health policy and systems research involving existing interventions and epidemiological research to inform priority setting.<sup>14</sup>

Depression and anxiety, which cause the greatest burden among neuropsychiatric diseases,<sup>25</sup> were considered a priority condition by a large proportion of researchers and stakeholders. A nationwide survey of stakeholder perspectives on research priorities in mental health in Australia also showed that all stakeholder groups prioritize affective disorders.<sup>16</sup> The prioritization of substance use disorders and schizophrenia by a large proportion of stakeholders also follows the burden of disease estimates.<sup>25</sup> In keeping with their burden, the Lancet Global Mental Health Group focused on four disorders while setting priorities for global mental health research: depressive, anxiety and other common mental disorders; alcohol- and other substance-abuse disorders; child and adolescent mental disorders; and schizophrenia and other psychotic disorders.<sup>14</sup> Compared to their burden, suicide was under-prioritized and dementia was 'over'-prioritized, especially by researchers. Suicide appeared to be similarly under-prioritized in a previous audit of mental health research publications from LAMI countries.<sup>13</sup>

Despite differences in definition of population subgroups, children and adolescents and the socially and economically disadvantaged were consistently rated highly by all stakeholder groups in the Australian survey on stakeholder perspectives.<sup>16</sup> The prioritization of women in this study may reflect their greater risk for the highly prevalent and burdensome depressive and anxiety disorders,<sup>25,26</sup> as well as their disadvantaged status with regard to men. Many international organizations have stressed the need for gender-mainstreaming in research.<sup>3,21</sup>

In the present study, the most salient difference between researchers and stakeholders was in the importance accorded to personal interest of researchers as a criterion for prioritizing research. Experts in research governance suggest that ideological emphasis on 'scientific autonomy' in the process of research agenda setting has been largely responsible for the lack of public health and operational emphasis in research agenda; and support the use of a systematic and transparent process of priority setting to ensure that the voice and will of the different stakeholders are heard and respected.<sup>1,3,14-21</sup> The finding of higher ranking of burden of disease in comparison to social justice as criteria for prioritization of research in the present study is similar to the greater emphasis on disease burden in comparison to equity seen in an audit of projects on health policy and systems research in LAMI countries.<sup>27</sup> The very low rank accorded to policy-maker request by both researchers and stakeholders can be problematic because strategically integrating research into the health system functions of stewardship and service delivery facilitates government support for research.<sup>28</sup>

Researchers' and stakeholders' ranking of subjective priorities were similar to the ranks achieved by similar response categories in projects conducted by researchers, particularly for types of research and criteria for prioritization. A greater number of differences were noted for disorders and specific populations (mainly for medium priority disorders and sub-populations), suggesting a need for better research governance as indicated by earlier audits of presentations and publications on mental health research from LAMI countries.<sup>12,13</sup> Both researchers and stakeholders gave a much higher priority to persons affected by poverty in comparison to the rank achieved by this sub-population in research projects, suggesting that research on equity needs to be given greater prominence. On the other hand, both researchers and stakeholders gave a much lower priority to prisoners in comparison to the number of projects done on this sub-population, suggesting that the 'captive' nature of this subpopulation makes it easier to conduct research on them. It may be important to look into ethical aspects of the research conducted on prisoners.

In order to contextualize issues related to delineating priorities for mental health research in LAMI countries, it would be important to remain cognizant of the many barriers to research in poorly resourced settings with scarce financial, human and technical resources.<sup>29,30</sup> While data on the number of researchers and research funding in the area of mental health in LAMI countries are not readily available, it is known that the ratio of scientists per 1000 population in developing countries is under 0.5, in contrast to developed countries where the ratio is over 2. Similarly, developing countries invest less than 1% of their GDP in research and development, compared to 2% in high-income countries.<sup>31</sup> Thus, in addition to improvement in prioritization of mental health research, efforts would be needed to increase resources (e.g. capacity and funding) available for conducting such research in the LAMI countries.<sup>14,28,32</sup>

It also needs to be emphasized that the present study does not address the issue of the priority to be accorded to research in relation to other activities (e.g. services) that are needed in the LAMI country context. However, influential expert groups envision an active role for research in the multidimensional efforts required to change the current mental health situation in these countries.<sup>2,14</sup> Though, the ability of national institutions in LAMI countries to produce and use high quality health research that is appropriate to their needs can be weak at various stages of the policy process; scientific research informs mechanisms (e.g. media, powerful advocates) that influence policy and public health;<sup>33,34</sup> and there are some good examples, where local research findings were interpreted and utilized against a background of global evidence and experience from different settings to change government policies in the mental health field in LAMI countries in LAMI countries.<sup>35,36</sup>

### ***Regional issues***

Assessed in terms of ranks the concordance between the subjective priorities of researchers and stakeholders was fairly high; and actually greater than the concordance between researchers' subjective priorities and the ranks given to similar response categories in research projects. Consistently higher prioritization of certain issues (e.g. learning disorders in the Americas) by both researchers and stakeholders in comparison to the rank achieved by these in research projects make them important for regional research governance.

While there was an overall similarity in the appreciation of need (burden of disorder) among researchers and stakeholders, some differences in values and interest were also evident. American stakeholders gave a lower priority to dementia in comparison to researchers and research projects. A similar finding was reported in the Australian survey on stakeholder perspectives and the authors suggested that stakeholders may have a lesser appreciation of the burden caused by dementia;<sup>16</sup> however, a discordance between researchers and stakeholders was not seen in Africa and Asia. Similarly, African stakeholders gave a lower ranking to suicide in comparison to researchers and research projects; however researchers in the Americas gave a lower priority to the same condition in comparison to stakeholders. While, more research is required to understand the reason for the differences between researchers and stakeholders and between regions; cognizance of these differences is necessary for the process of translation of research findings into information related to regional research governance including decisions on funding.<sup>37</sup>

There were greater inter-regional differences regarding priorities between stakeholders in comparison to researchers, probably due to differences in appreciation of financial capabilities, information gaps and distortions, the political environment, and the values and ethics of a given society. Hence, eliciting stakeholders' input would appear to be very relevant at each level (local, national, regional, global) of priority setting.

Larger inter-regional differences in ranking were noted for disorders given lower ranks and for many specific populations, suggesting areas where elicitation of stakeholder perspectives would be absolutely crucial - conditions for which evidence of need (e.g. burden) are lacking or differences in need are less salient and issues that appear to be particularly imbued with social values in the given context(s). Significantly, there was no inter-regional variation in the criteria for prioritization of research, which is welcome information for consensus building and working on global priorities.

### ***Methodological Issues***

An innovative aspect of the methodology applied here was to reach out to a large and reasonably representative group of active researchers in LAMI countries by following a two-stage design, starting with mapping of researchers and stakeholders through both literature searches and snowball technique, and then surveying them through six regional teams. The large number of researchers identified in Brazil, China and India was in keeping with their population size and recognized research capacity.<sup>7,13</sup> As in the Australian survey of stakeholder priorities,<sup>16</sup> relevant stakeholders were more difficult to sample because there were few organized lists and it was difficult for research groups (based outside the country) to identify stakeholders who were familiar with mental health research.

Postal questionnaires are widely used to collect data in health research and appeared to be the only financially viable option for collecting information from the large, geographically dispersed populations addressed in this study. The study suffers from the known disadvantages of postal questionnaires that is low response rate and consequent lack of representativeness; despite the fact that we tried to meet most of the well-known criteria that increase response rates (use of a short questionnaire, personalized letters, pre-contact, follow-up contact, and academic origin of the investigation).<sup>38,39</sup> The low response rate could be partly explained by myriad pragmatic difficulties, e.g. difficulties in locating current contact details due to mobility of researchers;

dispersion of researchers across a range of departments; poor internet facilities and telephone and postal services; and language barriers. However, it is also possible that issues related to saliency of the questionnaire for the intended subjects played a role in the low response rate. Subjects might have doubted the usefulness of the questionnaire on methodological grounds (use of forced choice format to answer complex questions related to research priorities) or in terms of its ability to meet its intended outcome (change in research priorities at the national/ regional/ global level).<sup>38-40</sup> However, the intensity and breadth of the exercise in identifying and surveying researchers and stakeholders provides a more representative opinion on the research priorities in mental health in LAMI countries in comparison to the opinion of a few highly selected experts that form a part of most priority-setting efforts. This is a significant contribution of the study, particularly because there is no previously published data on this issue.

The convergence of values in the present study should be a strong reason for paying attention to its findings; however it is possible that the results may have been influenced by our utilization of a ranking methodology with prefixed options, particularly for questions with few response options e.g. types of research and criteria for prioritization. Stakeholders' values can be directly elicited using more sophisticated quantitative (e.g. surveys where respondents weigh or rate their values) as well as qualitative (e.g. individual interviews, Delphi technique, group discussions, concept mapping) methods.<sup>19</sup> Previous transnational studies on research priorities have utilized discussion groups,<sup>41</sup> and content analysis of projects;<sup>27</sup> however, these studies were conducted on much fewer respondents or projects in comparison to the present survey. The nationwide stakeholder survey on research priorities in mental health in Australia utilized a methodology that was similar to our survey.<sup>16</sup> It is important to recognize that the higher prioritization of some types of research, disorders and specific populations mandated by the forced choice format necessarily led to lower prioritization of others such as clinical trials; suicide, learning disabilities and dementia; and refugees, minorities, prisoners, and those with disability. It is hoped that the 'absence of the latter from the priority list' should not lead to a neglect of the already tenuous efforts to research these major areas and subgroups with high unmet need for research (e.g. clinical trials<sup>42</sup>).

The following limitations of the survey should also be kept in mind while interpreting its results. Identified options that were outlined in the questionnaire were not compiled through an objective and repeatable method, but rather through consensus reached by panels of experts; and the decisions could be seen as driven by research interest bias of these experts. Stakeholders may have less knowledge about research opportunities in the mental health field in comparison to researchers and some stakeholders might have had difficulty in distinguishing between priorities for research and service provision.<sup>16</sup> It is possible that disaggregating the stakeholder groups (e.g., service providers, carers) might have yielded different results. In the Australian survey, various stakeholder groups had differing perspectives on research priorities, and major differences were observed between committees that evaluate research grants, and consumer and carer groups.<sup>16</sup> Also, the questionnaire distributed to researchers in one sub-region in the Americas did not include the item on social justice as a criterion for prioritizing mental health research, making conclusions on this item tentative.

### ***Implications***

Mental health research as a component of health research is an essential link to equity and development. For research priorities to serve as a basis for policy and service delivery, a major effort is needed to ensure that all countries and institutions base their resource allocations on a priority-setting process that is transparent, participatory and scientific. Institutions (governments, donors, research institutions and non- and inter-governmental organizations) concerned with promoting mental health research should use the priorities that researchers and stakeholders in LAMI countries seem to agree upon as the basis for generating policy and service relevant evidence for global mental health. The differences between regions should form the basis for regional specificity in priority setting and the differences between researchers and stakeholders, as an argument for efforts to generate broad stakeholder participation in mental health research stewardship. The following steps may be helpful in ensuring implementation of mental health research priorities at various levels: transformation of the broad list of research priority areas into a research portfolio; integration of priorities into appropriate plan, agenda or policy to ensure political backing; periodic review and update of priorities; and investment in research priorities.

#### | Implications

| The similar views expressed between a large and reasonably representative group of active researchers and stakeholders, and across regions; provides the common grounds for generating policy and service relevant evidence for global mental health.

| Stakeholder groups differed in the importance they gave to personal interest of researchers as a criterion for prioritizing research, a finding that underlines the utility of multiple stakeholder perspective in developing balanced priorities.

#### | Limitations

| The response rate was low and the number of responses was not proportionate to the number of identified researchers and stakeholders in each country.

| The results of the survey could have been influenced by its utilization of a ranking methodology with prefixed options.

| Identified options that were outlined in the questionnaire were not compiled through an objective and repeatable method, but rather through consensus reached by panels of experts.

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**Table 1. Researchers' and stakeholders' opinion and research projects regarding mental health research priorities: types of research (% , rank)**

Regions	Africa	Asia	The Americas	Global
Stakeholder Category	Resear-chers (N=114)	Stake-holders (N=35)	Projects (N=267)	Resear-chers (N=299)
Stakeholder Category	Resear-chers (N=115)	Stake-holders (N=35)	Projects (N=263)	Resear-chers (N=297)
Stakeholder Category	Resear-chers (N=114)	Stake-holders (N=35)	Projects (N=253)	Resear-chers (N=294)
Stakeholder Category	Resear-chers (N=113)	Stake-holders (N=35)	Projects (N=269)	Resear-chers (N=296)

Stakeholder Category | Resear-chers

(N=115) | Stake-holders

(N=35) | *Burden of disease*

| Resear-chers

(N=297) | Stake-holders

(N=160) | *Burden of disease*

| Resear-chers

(N=399) | Stake-holders

(N=102) | *Burden of disease*

| Resear-chers

(N=811) | Stake-holders

(N=297) | *Burden of disease*

| Dep/ Anx |64.3 (R1) |54.3 (R2) |7983 (R1) |73.1 (R1) |74.4 (R1) |44897 (R1) |82.5 (R1) |73.5 (R1) |8326 (R1) |76.4 (R1) |71.7 (R1) |61207 (R1) | Subs Use D |50.4 (R2) |71.4 (R1) |2599 (R2) |38.4 (R3) |59.4 (R2) |9405 (R4) |63.7 (R2) |59.8 (R2) |4919 (R2) |52.5 (R2) |60.9 (R2) |16922 (R2) | Psychoses |37.4 (R3) |48.6 (R3) |2122 (R3) |39.7 (R2) |37.5 (R3) |9489 (R3) |42.4 (R3) |44.1 (R3) |1490 (R3) |40.7 (R3) |41.1 (R3) |13100 (R4) | Suicide |16.5 (R4) |8.6 (R6) |1024 (R4) |29.3 (R4) |22.5 (R4) |13847 (R2) |5.5 (R6) |20.6 (R4) |758 (R5) |15.8 (R5) |20.2 (R4) |15630 (R3) | Dementia |10.4 (R5) |20.0 (R4) |438 (R6) |15.5 (R5) |15.6 (R5) |4048 (R5) |19.3 (R4) |18.6 (R5) |750 (R6) |16.6 (R4) |17.2 (R5) |5236 (R6) | Epilepsy |7.8 (R6) |17.1 (R5) |1735 (R5) |11.1 (R6) |4.4 (R6) |3622 (R6) |7.5 (R5) |9.8 (R6) |896 (R4) |8.9 (R6) |7.7 (R6) |6254 (R5) |

R: Rank

Dep/Anx, Depression/anxiety; Subs Use D, Substance use disorders; Child Adol D, Disorders with onset in childhood and adolescence; Personality, Personality issues; Learning D, Learning disorders; Eating D, Eating disorders.

Note: The sum for some variables is more than 100% because subjects could give multiple responses within the same category.

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