Challenges and priorities for global mental health in the Sustainable Development Goals (SDG) era

Workshop Report

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Preface

Mental health and substance use disorders account for 7.4% of the global burden of disease and make up the greatest economic cost of non-communicable diseases (NCDs).[1] In low- and middle-income countries (LMICs), the economic impact of mental health disorders in 2010 was estimated at US $870bn and this is projected to more than double by 2030.[2]

Fewer than one in four people with a mental health disorder receive treatment, with access to treatment even more limited in low-resource settings. Underfunded mental health services, a shortage of mental health professionals and the stigma associated with mental health disorders create barriers to scaling-up treatments and deter individuals from seeking help when treatments are available.

In 2011, the Grand Challenges in Global Mental Health initiative, funded by the US National Institute of Mental Health (NIMH) and supported by the Global Alliance for Chronic Diseases (GACD), undertook a Delphi consensus exercise to identify research priorities for the next decade that would have the greatest impact on people with mental, neurological and substance use disorders. The initiative set out 25 key challenges across six goals.

Since then, there has been a growing global recognition of the importance of mental health. It is explicitly mentioned in the SDGs and bodies such as the World Health Organization (WHO) and the World Bank have published landmark reports on mental health.

To assess progress towards addressing the Grand Challenges in the SDG era, the Academy of Medical Sciences convened a discussion workshop in June 2018, attended by 66 representatives from 22 different countries, mostly LMICs. Discussions focused on the research priorities and challenges to realise the two SDG targets relevant to mental health: universal health coverage (UHC) and prevention across the life course.

The meeting, held at the Academy of Medical Sciences, London, UK, was organised by a workshop steering committee (Appendix 1). This report is intended to provide a summary of the themes that emerged during the discussions. It reflects the views expressed by participants at the meeting and does not necessarily represent the views of all participants, all members of the steering committee or the Academy of Medical Sciences.

1.   Whiteford HA, et al. (2013). Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010. The Lancet **382(9904)**, 1575–86.

2.   Bloom DE et al. The Global Economic Burden of Noncommunicable Diseases. 2011. Geneva: World Economic Forum

Executive summary

Published in 2011, the Grand Challenges in Global Mental Health initiative provided a framework to guide the research needed to improve treatment and prevention of mental health disorders and expand access to mental health services. At the Academy's workshop on global mental health participants reflected on progress since 2011, focusing on specific life-course stages, and identified priorities for research in treatment and prevention, as well as enduring challenges and emerging opportunities.

Guiding principles for global mental health research

The integration of mental health into global health and development agendas: Participants agreed that, since 2011, the global profile of mental health has increased significantly. Mental health is both explicitly and implicitly referred to in the SDGs and, more importantly, the interdependence of mental health and other SDGs is widely recognised. Expanding access to appropriate mental health services to everyone regardless of socio-economic status is also integral to the global momentum towards UHC. The close association between mental health and these global agendas could provide additional impetus and present new research opportunities to reduce the burden of mental health disorders.

A life-course perspective: Participants also noted that the life-course perspective is a key developmental framework for addressing mental health questions. Life stages such as motherhood, early childhood, adolescence, adulthood and older adulthood present unique challenges, influencing the nature of mental health disorders experienced and the support and care required. The life-course perspective also highlights how mental health disorders may have their roots in the early stages of life, and the important implications for prevention.

Current status of global mental health research for treatment and prevention

Significant progress has been made in the development and evaluation of psychosocial interventions for mental health disorders and in models of multidisciplinary teams suitable for LMICs. Importantly, the recognition that mental health disorders are universal aspects of the human condition has provided a rationale for the repurposing of effective, theoretically informed treatments across diverse contexts. Nevertheless, access to mental healthcare globally remains low.

A multitude of social determinants affect mental health, spanning multiple domains, which impacts on strategies for prevention and promotion. Research has begun to unpick complex pathways of causation, examining which distal and proximal factors affect mental health, as well as the reciprocal relationship between mental health and economic wellbeing. These efforts will underpin the development of effective, affordable, and implementable interventions.

Priority areas for global mental health research

Treatment and care: Participants concluded that an extensive body of evidence now exists on the effectiveness of treatments for mental health disorders and, to some extent, their delivery by non-specialised providers. Key research challenges include the design and evaluation of evidence-based treatments tailored to local health systems and socio-cultural contexts, and the design and assessment of strategies for use at a population level.

Participants outlined a 'core plus custom' model. As the understanding of mental health disorders improves, and new interventions are evaluated, the range of core options available for adaptation to local circumstances could be expanded. These core options, such as validated treatments and models of care, could be customised to local needs, constraints and facilitators.

Within the context of UHC, participants also identified a need for research on strengthening health systems, incorporating mental healthcare and the development of sustainable models of funding.

It was suggested that research could assess how medical professionals, community health workers, informal healthcare providers (such as traditional healers and peers) and existing social infrastructure (including religious institutions, cooperatives, schools or self-help groups) could play a role in expanding access to services.

Participants also identified research priorities at key life stages. These included how best to engage partners and other family members in maternal mental health interventions; how to design adolescent-specific interventions; and how to provide care for vulnerable older people with multiple health conditions.

Prevention and promotion: It was agreed that the evidence base is not as well established for promotion and prevention, providing less scope for applied intervention studies. It was recognised that a deeper understanding of chains of causation, and how proximal determinants such as those that precipitate diseases mediate the effects of distal determinants that represent an underlying vulnerability for a particular condition, was required. This would help identify appropriate points of intervention and provide a basis for the evaluation of interventions.

Promotion was also seen to raise an evaluation challenge. Good mental health is not simply the absence of a mental health disorder, yet there is no agreed metric for the 'positive' aspects of mental health. The need for mental health promotion to evaluating positive mental health outcomes was recognised as a significant challenge.

When looking at mental health from a life-course perspective, it was felt that research on interventions early in the life course for prevention and promotion was vital. A better understanding of the factors contributing to mental health resilience could help identify ways to build protective mental health reserves. It was suggested that research could examine issues such as the role of parents and schools in promoting good mental health, how to improve links between education and health sectors, and how to reach vulnerable young people outside the education system.

The issue of how best to protect the mental health of vulnerable older people, many of whom are at risk of poverty, social isolation, discrimination and elder abuse, was also seen as an important challenge. Innovative models of community or financial support were seen as possible solutions for further investigation.

Challenges and opportunities

Understanding cultural context: Participants recognised that conceptualisations of, and responses to, mental health disorders are strongly influenced by factors such as early life experiences and socio-cultural context. Service providers typically rely on standard methods of diagnosis and categorisation of mental health disorders, yet these may not be consistent with individuals' belief systems, and patients may reject diagnostic labels.

Research on these contextual factors could inform the design of appropriate diagnostic and assessment tools, support efforts to increase the demand for mental health services, improve understanding of the mechanisms involved in the aetiology of mental health disorders or responses to interventions, and influence the design of intervention strategies.

The impact of digital technologies: New digital technologies were seen to be a double-edged sword. Their positive impact being the opportunities they offer in capturing mental health-related data directly from individuals, and delivering individualised self-help and training of providers. Conversely, concerns were raised about the potential mental health impact of the growing global use of social media and other digital technologies, as well as privacy and data security issues. This field is new and further research would bring insight into the advantages and disadvantages of these issues.

Intersectoral approaches: It was suggested that intersectoral approaches should be central to the development and evaluation of integrated mental health services, spanning social care and community support. Research across sectors is also important for understanding the impact of distal determinants and pathways of causation. Participants also noted that sectors such as education or the workplace could contribute to the development and evaluation of interventions to promote mental wellbeing.

Introduction

In 2010, a consortium of researchers, advocates and clinicians undertook a systematic Delphi consensus exercise to identify Grand Challenges in Global Mental Health – defined broadly to include the full range of mental, neurological and substance use disorders. An iterative Delphi method was used to generate a long list of Grand Challenges which were subsequently prioritised to create a ranked list of the top 25.[3] The Grand Challenges, published in 2011, spanned six goals with four cross-cutting summary principles (Box 1); each goal being associated with a series of research priorities.

The Grand Challenges provided a framework to guide global mental health research, as well as impetus to a field that has traditionally received less attention than its human and economic cost deserves. The Millennium Development Goals, for example, did not mention mental health.

Box 1: Grand Challenges goals and summary principles

Goals
- Identify root causes, and risk and protective factors.
- Advance prevention and implementation of early interventions.
- Improve treatments and expand access to care.
- Raise awareness of the global burden.
- Build human resource capacity.
- Transform health system and policy responses.

Summary principles
- Use a life-course approach to study.
- Use system-wide approaches to address suffering.
- Use evidence-based interventions.
- Understand environmental influences.

The growing global profile of mental health is reflected in its specific inclusion within the SDGs, which were launched in 2015. Mental health and substance use are specifically mentioned in SDG targets 3.4 and 3.5, and are implicit in target 3.8 on UHC (Box 2).

3.   Collins PY, et al. (2011) Grand challenges in global mental health. Nature **475(7354)**, 27–30.

Box 2: Mental health-related SDG targets

Target 3.4

• By 2030, reduce by one-third premature mortality from non- communicable diseases through prevention and treatment and **promote mental health** and wellbeing.

Target 3.5

• Strengthen the **prevention and treatment of substance abuse,** including narcotic drug abuse and harmful use of alcohol.

Target 3.8

• Achieve **universal health coverage,** including financial risk protection, access to quality essential healthcare services and access to safe, effective, quality and affordable essential medicines and vaccines for all.

It is therefore a timely moment to revisit the 2011 Grand Challenges to assess progress and emerging priorities for global mental health research. The Academy of Medical Sciences' meeting brought together researchers, mental health professionals, public health specialists and other stakeholders to review the Grand Challenges, with a particular focus on treatment, prevention and promotion, and on research priorities, challenges and opportunities at key stages of the life course. Participants identified priorities for future research, as well as current challenges and emerging opportunities (these are summarised below, with more details on life-stage-specific questions provided in Appendices 2–5).

Guiding principles for global mental health research

Integration with global health and development agendas: The past decade has seen the engagement and mobilisation of an international community of stakeholders, raising the global profile of mental health. This is reflected by the inclusion of mental health in the SDGs, as well as the publication of key reports by both WHO[4] and the World Bank.[5] Recognising and building on shared interests and common causes promises new opportunities to advance mental health and achieve greater impact.

Participants noted that mental health is relevant to most, if not all, of the SDGs. Notably, the relationship is generally reciprocal; the achievement of many of the SDGs, such as ending poverty (SDG1) or hunger (SDG2), is likely to benefit mental wellbeing. Conversely, promoting mental health could enhance individuals' capacity to contribute to society, economically, socially and in other ways that help achieve the SDGs. Indeed, some participants suggested that boosting mental health might be seen as an enabler or accelerator of sustainable development.

Notably, this raises the potential for cross-SDG interventions, which could have a potential impact on mental health as well as other SDG targets. It also suggests that a case could be made for investment of development assistance in mental health-related initiatives.

A further significant development since 2011 has been the growing emphasis on UHC, one of WHO's three strategic priorities.[6] Participants argued that mental health services should be a core aspect of UHC, supporting the parity of esteem principle for mental and physical health. This perspective also emphasises the importance of integrating new mental health services into routine healthcare delivery platforms and using mental health service development as a catalyst for health system strengthening.

The nature of the relationship between mental health and NCDs was also discussed. Mental health is not always considered within the context of NCDs – for example, some national NCD strategies do not include mental health. Participants suggested that there was the potential to focus more attention on mental health by advocating for its inclusion within NCD strategies, and by highlighting the common co-occurrence of NCDs and mental health disorders, and the need for integrated treatment and prevention. The WHO Independent High-level Commission on NCDs recently stressed the intimate association between mental health and 'conventional' NCDs[7], and mental health is fully included in WHO's mission.

A life-course perspective: Participants recognised that the life-course perspective, highlighted in the original Grand Challenges paper, remained an important lens through which to view mental health. Importantly, the nature of risk factors for mental health disorders varies at different stages of life, and the impact of these disorders may be very different at different life stages.

The life-course perspective also recognises that mental health disorders at one stage of life may have their roots in earlier-life exposures. This highlights the importance of looking for early antecedents of adult mental health disorders, as well as the potential long-term benefits of early interventions.

4.   WHO (Geneva) (2013). Mental health action plan 2013–2020. http://www.who.int/mental_health/action_plan_2013/en/

5.   World Bank (Washington, DC) (2016). Out of the Shadows: Making Mental Health a Global Development Priority. http://documents.worldbank.org/curated/en/270131468187759113/Out-of-the-shadows-making-mental-health-a-global-development-priority

6.   WHO (Geneva) (2018). Thirteenth general programme of work 2019–2023. http://www.who.int/about/what-we-do/gpw-thirteen-consultation/en/

7.   http://www.who.int/ncds/governance/high-level-commission/synergies-beating-ncds/en/

Current status of global mental health research for treatment and prevention

Several important developments have occurred since the Grand Challenges were published. Significant progress has been made in dissecting the underlying mechanisms of mental health disorders, at behavioural, neural and molecular levels. This is heralding a new era in which conditions could be categorised according to their fundamental features, and in which treatments are targeted at specific behavioural abnormalities and pathological processes. Some biomarkers are being identified to enable patient stratification and tailoring of treatments.

One important advance has been the recognition that, although mental health disorders have culturally specific meanings, they represent universal aspects of the human condition. Post-natal depression shares key features in mothers in, for example, New York, Mumbai, Tokyo and Lagos. This has important implications for treatment, providing a rationale for the repurposing of effective, theoretically informed interventions across different settings.

Furthermore, significant progress has been made in the development and evaluation of interventions. Much evidence has been gathered on successful psychosocial interventions across a range of conditions, notably for mood and anxiety disorders, and at different life stages. With most LMICs experiencing a shortage of healthcare professionals, innovative models have been developed that enable groups such as community health workers to form part of a multidisciplinary team to deliver population-wide care.

Some progress has been made in clinical and research capacity building in LMICs, with the establishment of regional hubs, international networks and new training programmes.

Priority areas for research: Treatment and care

Overarching issues

Expanding coverage: A strong theme to emerge at the meeting was that a convincing body of evidence had been developed on the effectiveness of treatments for a range of conditions and in different populations and contexts. Given the universalities of mental health disorders, these treatments could be adapted locally and evaluated in different settings to expand coverage.

It was also noted that although core elements of successful interventions have been developed, practical challenges remain in their introduction. Hence a key challenge is for research to design, evaluate and promote the scale-up of locally tailored interventions. In particular, intervention design needs to take account of local health system organisation and healthcare worker resourcing, the potential for integration with other aspects of service delivery and local cultural and environmental factors.

One favoured concept was 'core plus custom' intervention designs. These draw upon 'core' or 'universal' evidence-based and theoretically informed approaches to treatments which are then customised according to local needs, health system constraints and cultural influences. The 'core plus custom' approach could be used to define integrated treatment and care packages for evaluation in effectiveness trials, potentially leading to further scale-up and implementation studies.

Building the evidence base: Along with these applied studies, participants called for a continued focus on mechanistic research to dissect the interaction between socio-environmental risk factors and biological pathways in mental health disorders. Such studies could identify universal principles to underpin the design of interventions that target specific cognitive and behavioural mechanisms, or socio-environmental risk factors, adding to the core knowledge base and informing the design of implementable new interventions.

Testing alternative delivery models: Shortages of healthcare workers remain a major barrier to the delivery of mental health services in many LMICs. It was suggested that research could explore innovative methods that involve a wider range of individuals and institutions in service delivery. Although 'task shifting' and the involvement of community health workers have expanded access to services, it was recognised that there was a risk of 'task overload', and challenges in maintaining quality assurance. To expand capacity, research could explore the possible contributions of informal health providers, such as traditional healers who are often widely consulted and influential. There could be opportunities to engage with traditional healers to ensure they offer some evidence-based treatments and refer patients to formal healthcare providers appropriately.

Similarly, religious organisations and bodies such as cooperatives and self-help organisations provide a well-established social infrastructure that could enable health systems to reach larger numbers of people and expand access to mental health services.

Life-course-specific issues

Maternal and child mental health: The importance of maternal mental health to child development was repeatedly stressed. Much evidence now shows that mental health disorders in mothers affect the risk of adverse birth outcomes and child development and, conversely, that intervening to enhance maternal wellbeing also benefits young children. It was also recognised that women are more likely to be exposed to multiple stressors, many poverty-related.

While mothers might therefore be considered the key targets of interventions, participants also stressed the importance of looking at wider social structures and norms. In many societies, husbands and other family members,

particularly mothers-in-law, could have a significant influence on mothers' help-seeking behaviour. Wider social attitudes may be either supportive or, more usually, stigmatising of mental health disorders. Participants suggested that research could explore how interventions can address social and familial influences, for example by engaging with other family members and local communities.

A further key research question is how to reach disadvantaged mothers and infants, such as migrants or members of marginalised communities. These groups may be at particular risk of mental health disorders but also least able to access mental health services or to be reached by conventional community-based approaches. Participants also suggested that research was needed to identify appropriate models of support for families caring for infants with neurodevelopmental conditions and severe mental health disorders. Many infants remain at risk of poor treatment or abandonment.

Adolescence: As a stage of life characterised by multiple biological changes and the adoption of new social roles, adolescence was seen to present specific mental health challenges. It is a time when several psychiatric conditions first manifest; with adolescent mental health also highly influential in determining mental health status in adulthood. Importantly, it was argued that adolescents should be considered as a distinct group, not as 'large children' or 'mini-adults'. There was felt to be limited evidence on mental health in adolescents in LMICs, and few services specifically designed for them. Research was therefore needed to provide a full understanding of the distinctive features of adolescent mental health disorders to inform the design and evaluation of appropriately tailored interventions. This calls for strong engagement with adolescents, including involving them in intervention design.

Other possible research questions include the potential role of schools in the identification of mental health disorders and the promotion of mental health, and improving links between education and health systems. In addition, research could explore ways to reach children who are not part of the formal education system, and whose absence from school could be associated with adversities posing a risk to mental health.

Participants also stressed the extent of the challenge. More than 40% of the world's population is 24 years or younger, and most young people live in LMICs. Africa in particular is seeing significant growth in its numbers of young people.

Adulthood: For adults, lack of access to treatment was a dominant theme. Stigma was still felt to be a major obstacle in most societies. As well as research in how to improve the availability of mental health services, it was also suggested that studies could explore how best to deliver services to minority and marginalised communities (including sexual orientation minorities and migrants).

Health systems in LMICs were typically felt to have a heavy emphasis on the management of severe mental illness. While community-based approaches to care might be preferred to institutions, it was also recognised that institutions were needed for some individuals. Research could explore how LMIC health systems could implement humane and caring institutional environments. A further important focus could be on how to foster more progressive attitudes and practices among informal healthcare providers such as traditional healers.

Old age: Old age was identified as a particularly challenging time for people in LMICs with mental health disorders. It is associated with a decline in cognitive and physical abilities, as well as with an increased risk of dementia and other NCDs. Social support is likely to be limited, generating a large informal care burden on families and communities.

Older people are typically vulnerable, at risk of poverty, social isolation, negligence and elder abuse. They may be reluctant to seek help, particularly when self-funding their care, and may see themselves as a burden on their families. With increasing urbanisation, older people may find themselves relocated to unfamiliar urban slums or left behind in rural areas with no family support.

According to participants, a key research area is the design of appropriate models of community care for older people, as health systems in LMICs are typically not structured to provide support for older people with mental health disorders, and social care is often non-existent. It was suggested that support mechanisms should span healthcare, social care and informal family and community support. Specific questions could include assessing the potential benefits of financial support mechanisms such as social security systems. How to protect the mental health of carers was also identified as a further important research question.

Priority areas for research: Prevention and promotion

Overarching issues

Social determinants: As well as biological influences, multiple socio-environmental determinants affect mental health through poorly defined chains of causation. It was recognised that less evidence exists to guide the design of interventions to protect and promote mental health.

It was therefore suggested that a key research goal is to develop a deeper understanding of causal chains, for example through long-term longitudinal studies. Such work would shed light on how proximal factors mediate the effects of distal determinants, identifying potential points for intervention and providing a basis for the evaluation of interventions.

Mental wellbeing: Just as good physical health is not just the absence of physical illness, good mental health is not just the absence of mental illness. However, it is unclear if there is a coherent global understanding of 'good mental health' or appropriate tools to measure it. 'Mental wellbeing' was suggested as a possible term to capture this broader concept of good mental health. While reduced incidence or prevalence of mental health disorders can be used as indicators, it was argued that standardised and validated 'positive' measures to quantify mental wellbeing were needed. It was also recognised that the evaluation of outcomes should be based on dimensional rather than categorical approaches.

Resilience: Despite high exposure to mental health risk factors, some individuals maintain good mental health. Participants suggested that a key research goal is to develop a deeper understanding of resilience in the face of adversity, to provide the basis of interventions to enhance 'mental health reserve' and reduce the risk of mental health disorders.

Life-course-specific issues

Maternal and child mental health: It was suggested that the antenatal and postnatal care continuum provide a platform for exploring possible preventive interventions for mothers. As with treatment, it was proposed that the engagement of family or other community members in preventive interventions should be investigated.

Adolescence: For adolescents, participants suggested that research could explore how to mitigate exposure to natural disasters and civil conflict, as well as the normalisation of violence within society. A need to understand the impact of highly patriarchal societies, a lack of female empowerment, and in particular early marriage, was seen as an important research challenge.

The role of schools in teaching psychological coping or other life skills was also identified as an important focus for research, as was the use of sporting or cultural activities to promote mental wellbeing and how to reach vulnerable young people outside the education system. Other possible solutions warranting rigorous evaluation include financial measures such as social security systems, to alleviate poverty and encourage participation in education.

Adulthood and old age: For adults and older people, understanding the impact of early interventions was seen as a key research goal. Exploring the impact of the workplace and the potential of workplace-based interventions were seen as important priorities. Another important challenge was how best to protect the mental health of vulnerable older people, many of whom are at risk of poverty, social isolation, discrimination and elder abuse. Innovative models of community or financial support, such as social security systems, were seen as possible solutions for investigation.

Challenges and opportunities

Understanding cultural context: While the existence of patterns that are common to all human cultures worldwide (cross-cultural universals) is now clear, how mental distress is conceptualised can vary widely. Participants recognised the important influence of early life experiences and socio-cultural context on responses to mental health disorders. Understanding these factors has important implications for diagnosis, the design of interventions and help-seeking behaviours.

Diagnosis is a particular challenge. Mental health disorders may not necessarily be recognised as biomedical issues by individuals, for cultural or other reasons. Individuals may also reject diagnostic labels, for example for fear of stigmatisation and discrimination. The development of an evidence base on the epidemiology of mental health disorders and the effectiveness of treatments will depend on diagnostic instruments that are universal but also appropriate for different cultural contexts. The multidimensional nature of mental health is a further challenge to the design of widely applicable and practical diagnostic and assessment tools.

Conceptualisations of mental health disorders will also influence intervention design. Rather than relying on diagnostic labels, participants suggested mental health disorders could be framed in terms of specific impairments that relate to the patient experience, with an emphasis on designing treatments to specifically address these impairments. This calls for a good understanding of the symptoms that matter most to individuals, and have the greatest impact on their daily living.

Participants also argued that differing conceptualisations of mental health disorders, as well as a lack of appreciation of their treatability, could reduce demand for mental health services. Family and community influences may also discourage help-seeking. Culturally sensitive approaches, at individual and community levels, are likely to be needed to foster greater awareness and understanding of mental health disorders, and the potential for them to be prevented or treated successfully.

The impact of digital technologies: Given their rapid adoption in LMICs, new digital technologies were felt to offer great opportunities to collect data on the epidemiology and personal experience of mental health disorders. Ultimately, standardised and validated tools could be developed to capture data directly from participants in prevention and treatment studies (or to monitor the effect of interventions).

Digital tools also open up the possibility of new models of community-based support and care. As well as facilitating the work of community health workers and the coordination of multidisciplinary teams, new technologies offer innovative ways of expanding access through self-help. Strong engagement and co-creation methodologies will be needed to ensure that tools are appropriate for target populations, such as adolescents.

Nevertheless, it was also recognised that new digital technologies, particularly social media, were a double-edged sword. As well as offering benefits, social media could also be a risk factor for mental health disorders, particularly among adolescents. The growing use of social media is a gigantic global experiment, and the mental health consequences of it are currently unclear. Concerns were also raised about authorities' use of personal data for monitoring subjects' behaviour without appropriate security and privacy safeguards.

Interdisciplinary and intersectoral approaches: Workshop participants emphasised the importance of interdisciplinary approaches to research, particularly engagement with the social care community in the development and evaluation of integrated models of mental health support and care that span healthcare, social care, families and communities.

Groups such as anthropologists and social scientists provide important insight into the social context of mental health disorders, their presumed causes and socio-culturally acceptable solutions. Health service researchers, implementation scientists and health economists can support the development and evaluation of new models of care.

Participants also argued that researchers need to reach across sectoral barriers to understand the impact of distal social determinants on mental health and chains of causation. Intersectoral research collaborations have the potential to explore the spillover benefits of mental health interventions, for example in reducing crime, promoting social inclusion or enhancing economic development. Conversely, such collaborations could investigate the secondary mental health benefits of general health, social or educational interventions.

Research could explore how, for example, education and employment policy or urban design, can affect mental health and the risk of mental health disorders. Such work could highlight possible approaches to mitigate mental health impacts, testable in research projects. More generally, a broad perspective and intersectoral approach would help to build a strengthened evidence base on the association between mental health and SDGs outside the health domain.

Conclusion

Since the development of the Grand Challenges in Global Mental Health initiative in 2011, there has been growing awareness of the importance of mental health, not only as a goal in itself but also as a facilitator of wider societal development. Positioning mental health services within wider SDG and UHC agendas promises to provide further impetus to the development of integrated interventions to prevent mental health disorders, provide treatment, and ensure a supportive environment for research to achieve mental health goals.

A key take-home message from the workshop was that the goals, challenges and many of the research questions identified by the 2011 Grand Challenges Delphi consensus exercise remain pertinent today and largely unanswered. Four of the top five challenges were within the goal of improving treatment and expanding access to care, and it is within this domain that most progress has been made. With more evidence available on the effectiveness of psychosocial interventions, research on their local adaptation, implementation and scale-up is now a high priority.

Other long-standing issues remain to be addressed, including financing for mental health services and research, and the perennial issue of stigma. There remains a significant need to develop capacity, building on newly established regional centres of excellence and networks in LMICs, as well as new virtual academies to build leadership competencies.

Among the new research questions to emerge at the meeting, many relate to issues that are specific to different stages of the life course. The life-course perspective provides a valuable lens for understanding how mental health disorders are experienced at different stages of life, identifying age-specific risk factors, and developing appropriate models of care and prevention. Significant progress could be made by reframing the 2011 challenges and research questions in terms of life stage.

The UHC agenda also emphasises the importance of research to address key equity issues, including access to services among disadvantaged and marginalised communities. Research is also needed on how best to manage the mental health consequences of humanitarian emergencies and crisis situations. A further emerging theme is the need to consider mental health through a gender equity lens.

Digital technologies are having a profound global impact. There are research opportunities to understand the influence of social media and other digital technologies on mental health, particularly among younger age groups, and how they can be exploited to promote mental wellbeing. In addition, SDGs and the social determinants framework are opening up new opportunities for intersectoral collaboration to identify suitable points of intervention to promote mental wellbeing. Developing standardised metrics for mental wellbeing will be central to these efforts.

The challenges remain significant, but progress since 2011 offers encouragement that research can deliver the evidence needed to lessen the global burden of mental health disorders.

Appendix 1: Workshop steering committee

Co-chairs:
- Professor Vikram Patel FMedSci, Harvard University
- Professor Crick Lund, University of Cape Town and Centre for Global Mental Health, King's College London

Members:
- Professor Ricardo Araya, King's College London
- Professor Jonathan Burns, Exeter University
- Professor Andreas Heinz, Charité – Universitätsmedizin Berlin
- Dr Lourdes L. Ignacio, University of the Philippines, Philippines
- Dr Ritz Kakuma, London School of Hygiene and Tropical Medicine
- Professor Olayinka Omigbodun, University of Ibadan, Nigeria

Appendix 2: Motherhood and early childhood: Research priorities in treatment and prevention and promotion

Key issues and priority research questions identified in breakout sessions on treatment and on prevention and promotion were as follows:

Context:
- The burden of maternal mental health disorders is high in LMICs and influenced by a multitude of factors (financial, social, environmental, and cultural); very few maternal mental health services are available.
- Maternal mental health disorders can adversely influence child development, for example by reducing mothers' interactions with offspring; interventions can reduce this negative impact on child development.
- Family and community attitudes may act as barriers to help-seeking in some cultures; women may need the permission of their husband to seek help.
- Interventions could be universal (aiming to improve the mental wellbeing of all mothers), selective (aimed at those deemed to be high risk), or indicated (targeted at those with early signs of a mental health disorder).
- Less evidence is available on prevention and promotion activities, particularly in low-income countries; initiatives often focus on child development and pay less attention to maternal wellbeing.

Treatment:
- How can interventions engage men or other influential family members (e.g. mothers-in-law)?
- How can interventions be designed to incorporate evidence-based strategies and be implementable within local healthcare and cultural settings?
- Can mental health services be embedded within existing antenatal and postnatal care services?
- How can existing social infrastructures (such as religious organisations) help to expand the provision of services to women and children?
- Can 'home-grown' solutions be developed that better reflect local cultural sensitivities, rather than adapting interventions developed in high-income countries?
- How can advocacy and promotional activities (e.g. on social media) be used to raise awareness of service availability and increase uptake?
- What support do families of children with severe mental health disorders require, particularly to reduce the risk of abandonment?

Prevention:
- What are the longitudinal impacts of factors influencing the development of mental health disorders in children?
- How should mental wellbeing in young children be defined and measured?
- How does young children's exposure to everyday violence and trauma affect mental health and how can its impact be mitigated?
- What kinds of support are needed by children in the most vulnerable groups (e.g. displaced populations, those exposed to conflict, or natural disasters) to prevent mental health disorders?
- What are the mental health implications of early childhood marriage and child-bearing?
- What factors are associated with resilience in the face of adversity and how can they facilitate the design of interventions to protect mental health?
- What impact do fathers and other care-givers have on children's mental health, and what is the impact of non-parental childcare?
- More generally, how can the emphasis given to mental health in global maternal health and child development strategies be increased?

Appendix 3: Adolescence: Research priorities in treatment and prevention

Key issues and priority research questions identified in breakout sessions on treatment and on prevention and promotion were as follows:

Context:
- Adolescence is a key life stage, providing an opportunity to secure earlier mental health gains and setting the foundation for adulthood, but it is relatively neglected with few adolescent-specific mental health services.
- It is associated with life-stage-specific risk factors, including biological changes and emerging behavioural traits (e.g. risk taking), new social roles and evolving relationships with family and peers.
- Work with adolescents needs to recognise and adapt to these distinctive features; activities need to adopt a neurodevelopmental perspective and consider the biological changes adolescents are undergoing.
- There is a need to understand better how to engage with this group, their attitudes to and how they talk about mental health; they need to be involved in the development of interventions and could contribute to peer-led support.
- Gender issues are also likely to be critical; early marriage may be a significant issue for young women.

Treatment:
- How can additional institutions, including schools, youth clubs and other social structures, and non-traditional providers of services be engaged in service delivery to adolescents?
- Can existing health-related initiatives in schools be adapted to include a focus on mental health?
- How can services reach adolescents outside the school system who are living in adversity and are at high risk of mental health disorders?
- How can mental health services reach adolescents exposed to extreme adversity (e.g. conflict, natural disasters)?
- What are the key ethical challenges of working with adolescents (e.g. confidentiality and involving parents/guardians)?
- Should outcomes be focused solely on adolescence or longer-term mental health?
- How can we predict the longitudinal course of mental health problems emerging in adolescence? What are the treatment approaches needed for these distinct trajectories?

Prevention:
- How can sporting and cultural activities be used to benefit mental health in adolescents?
- What are the mental health impacts of financial mechanisms such as conditional cash transfers to address poverty and promote participation in education?
- How can preventive interventions be used with families or communities more widely, and work across sectors?
- What is the mental health impact of digital technologies such as social media?
- How can digital technologies be used to enhance mental healthcare for adolescents?
- What are the mental health impacts of public policies (e.g. on alcohol availability)?
- What factors contribute to resilience, and can psychological coping skills be taught effectively in schools?

Appendix 4: Adulthood: Research priorities in treatment and prevention

Key issues and priority research questions identified in breakout sessions on treatment and on prevention and promotion were as follows:

Context:
- Treatment and quality gaps are key issues in adult mental health.
- Important challenges include scaling-up, ensuring quality of services, integration in routine care and capacity building.
- Many factors are likely to influence adult mental health, through complex pathways of causation; there is still much to explore about whether the roots of adult mental health disorders originate at much earlier ages, and little is known about the detailed pathways of influence of social determinants.

Treatment:
- How can 'core' evidence-based components of interventions be adapted for implementation in local settings and be evaluated?
- How can task shifting be used to expand access and what risks are associated with this approach?
- How can secondary outcomes, such as violence or suicide, be prevented?
- How can access to mental health services be improved for specific groups, such as those with NCDs or affected by extreme life events?
- What are the best methods for identifying mental health disorders, given healthcare human resource constraints and some patients' lack of awareness that they have a treatable health condition?
- How can the scaling of mental health services learn from the HIV experience and the principles of implementation science?
- Why are national policies on mental health service provision not being implemented?
- How can new technologies improve access to services, for example through telemedicine or self-help applications?
- How can interventions mitigate the financial impact of mental health disorders?

Prevention:
- How can the adult mental health impacts of population-level interventions be determined and mediating factors identified?
- What impact does gender have on mental health and how can gender-related factors be addressed?
- How does the workplace affect mental health, positively or negatively, and what scope is there for workplace-based interventions?
- What roles do factors such as spirituality, education and community support structures play in protecting mental health?
- What is the best way to communicate preventive interventions to target populations, given the continuing stigma attached to mental health disorders in many societies?

Appendix 5: Old age: Research priorities in treatment and prevention

Key issues and priority research questions identified in breakout sessions on treatment and on prevention and promotion were as follows:

Context:
- All countries are facing increasing numbers of older people, and this life stage is affected by mental health disorders as well as cognitive decline/dementia. Most older people have few resources and limited access to healthcare and social protection.
- These trends have implications for healthcare, social care and informal care, particularly the latter in low-income countries.
- Migration can disrupt family and social support mechanisms, with older people relocated to unfamiliar environments such as urban slums or left behind and socially isolated.
- Older people may be reluctant to seek help for mental health disorders, seeing themselves as a burden on their families.

Treatment:
- What models of integrated community-based care, spanning healthcare, social care and informal care, are most suitable for older people in low-resource settings?
- How can enhanced mental healthcare for elders be financed?
- How can the rights of older people with mental health disorders be safeguarded, particularly those experiencing cognitive decline?
- How can appropriate support be provided to informal carers, including older people caring for peers?
- What suicide-prevention interventions are effective for older people?
- How can conditional cash transfers, social protection schemes or other mechanisms be used to mitigate financial burdens on families?

Prevention:
- What is the epidemiology of mental health disorders in older people and what facilities/resources are available to manage them in individual countries?
- How can non-health sectors, such as social welfare and informal community-based care providers, be mobilised to provide elder support?
- How can capacity be built for enabling early detection and prevention in the community?
- How can a life-course approach, promoting healthy ageing and mental health resilience, be leveraged to protect the mental health of older people?
- What role can care homes play in protecting mental health?
- What role do sensory impairments and co-morbidities play in the development of mental health disorders, and can mental health applications and enhanced social engagement prevent them?
- What impact do cultural influences have on the diagnosis of mental health disorders in older people?
- What impact do migration, social isolation and gender have on the development of mental health disorders in older people?
- What is the impact of social attitudes to ageing and how does this affect social engagement in older age?

Appendix 6: Attendees

Name	Position and institution
Dr Abubakar-Abdullateef Aishatu	Ahmadu Bello University Teaching Hospital, Nigeria
Professor Atalay Alem	Addis Ababa University, Ethiopia
Professor Ricardo Araya	King's College London, UK
Professor Lukoye Atwoli	Moi University, Kenya
Dr Florence Baingana	Makerere University, Uganda
Dr Tolulope Bella-Awusah	University of Ibadan, Nigeria
Dr Suraj Bhattarai	Nepal Academy of Science and Technology, Nepal
Professor Jonathan Burns	Exeter University, UK
Professor Bonga Chiliza	University of KwaZulu-Natal, South Africa
Professor Lucie Cluver	Oxford University, UK
Dr Pamela Collins	University of Washington, USA
Professor Renato D. Alarcon	Universidad Peruana Cayetano Heredia, Peru
Dr Mary de Silva	Wellcome Trust, UK
Dr Farah Deeba	University of Dhaka ,Bangladesh
Dr Ronita Desiree Cornelia Luke	Ministry of Health, Sierra Leone
Dr Julian Eaton	London School of Hygiene & Tropical Medicine, UK
Professor Seena Fazel	Oxford University, UK
Dr Abebaw Fekadu	Addis Ababa University, Ethiopia
Dr Cherylle G. Gavino	Philippines Department of Health, Philippines
Professor Oye Gureje	University of Ibadan, Nigeria
Professor Andreas Heinz	Charité – Universitätsmedizin Berlin, Germany
Professor Nusrat Husain	University of Manchester, UK
Dr Lourdes Ignacio	University of the Philippines, Philippines
Dr Ritsuko (Ritz) Kakuma	London School of Hygiene & Tropical Medicine, UK
Dr Lincoln Imbugwa Khasakhala	University of Nairobi, Kenya
Dr Abdul Jalloh	Kissy Psychiatric Hospital, Sierra Leone
Dr Mark Jordans	King's College London, UK
Dr Christian Kieling	Universidade Federal do Rio Grande do Sul, Brazil
Professor Eugene Kinyanda	Makerere University, Uganda
Professor Emilie Kpadonou	Benin National Academy of Sciences, Arts and Letters, Benin
Dr Kwabena Kusi-Mensah	Komfo Anokye Teaching Hospital, Ghana
Ms Lucita Lazo	World Association for Psychosocial Rehabilitation-Philippines, Philippines

Name	Position and institution
Dr Shuyan Liu	Charité – Universitätsmedizin Berlin, Germany
Professor Crick Lund	University of Cape Town, South Africa
Dr Boladale Mapayi	OAU/Teaching Hospitals Complex, Nigeria
Dr Louise Marshall	Wellcome Trust, UK
Dr Vania Martinez	Universidad de Chile, Chile
Dr Pallab Maulik	George Institute, India
Dr Seggane Musisi	Makerere University, Uganda
Dr Abhijit Nadkarni	Sangath, India
Professor Noeline Nakasujja	Makerere University, Uganda
Dr Elena Netsi	Wellcome Trust, UK
Dr Akin Ojagbemi	University of Ibadan, Nigeria
Professor Olayinka Olusola Omigbodun	University of Ibadan, Nigeria
Professor Mehdi Paes	Arrazi University Psychiatric Hospital, Morocco
Dr Rachael Panizzo	UKRI MRC, UK
Professor Vikram Patel FMedSci	Harvard Medical School, USA
Professor Riva Posse	University of Buenos Aires, Argentina
Dr Giuseppe Raviola	Harvard Medical School, USA
Dr Marcia Scazufca	University of Sao Paulo, Brazil
Meera Senthilingam	CNN Health & Wellness
Dr Rahul Shidhaye	Public Health Foundation of India, India
Dr Gema Simbee	Mirembe Mental Health Hospital, Tanzania
Dr Virginia Smith-Swintosky	Johnson and Johnson, USA
Dr Thara Rangaswamy	Schizophrenia Research Foundation (SCARF), India
Professor Rita Thom	University of the Witwatersrand, South Africa
Professor Ines V. Bustamante	Universidad Peruana Cayetano Heredia, Peru
Prof Richard Velleman	University of Bath/Sangath, UK
Mr Ian Walker	Public Health England, UK
Dr Frank Wiegand	Janssen
Professor Shehan Williams	University of Kelaniya, Sri Lanka
Dr Pedro Zitko	King's College London, UK
Professor Zukiswa Zingela	Walter Sisulu University, South Africa