SPECIAL ARTICLE

Prevention of mental and behavioural disorders: implications for policy and practice

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There is sufficient evidence indicating the efficacy of interventions in reducing risk factors, increasing protective factors, preventing psychiatric symptoms and new cases of mental disorders. Macro-policy interventions to improve nutrition, housing and education or to reduce economic insecurity have proven to reduce mental health problems. Specific interventions to increase resilience in children and adolescents through parenting and early interventions, and programmes for children at risk for mental disorders such as those who have a mentally ill parent or have suffered parental loss or family disruption, have also shown to increase mental well-being and decrease depressive symptoms and the onset of depressive disorders. Interventions for the adult population, from macro-policy strategies, such as taxation of alcohol products or workplace legislation, to individual support for those with signs of a mental disorder, can reduce mental health problems and associated social and economic burdens. Exercise, social support or community participation have also shown to improve mental health of older populations. Public mental health will benefit from continuing building the evidence base through combining different evaluation methods across low, middle and high income countries. The translation of evidence into policy and practice calls for action at the international, national and local level, including building capacity, advocacy, mainstreaming mental health into public health and other policies and securing infrastructures and sustainability. Mental health professionals have an important role to play in improving the evidence on prevention and promotion in mental health, in engaging relevant stakeholders for developing programmes, and as professional care providers in their practice.

Key words: Prevention, promotion, mental health, evidence, intervention effectiveness

The potential and possibilities for prevention of mental and behavioural disorders have increased substantially in recent years. This paper provides a brief review of the place of prevention within the overall public health strategy for mental and behavioural disorders, summarizes the current evidence for generic prevention interventions, and makes suggestions on how these can become part of policy and practice. For further information, the reader is referred to two publications produced by the World Health Organization (WHO) (1,2).

Universal, selective and indicated preventive interventions are included within primary prevention. Universal prevention targets the general public or a whole population group that has not been identified on the basis of increased risk. Selective prevention targets individuals or subgroups of the population whose risk of developing a mental disorder is significantly higher than average, as evidenced by biological, psychological or social risk factors. Indicated prevention targets high-risk people who are identified as having minimal but detectable signs or symptoms foreshadowing mental disorder or biological markers indicating predisposition for mental disorder, but who do not meet diagnostic criteria for disorder at that time.

Secondary prevention seeks to lower the rate of established cases of the disorder or illness in the population (prevalence) through early detection and treatment of diagnosable diseases. Tertiary prevention includes interventions that reduce disability, enhance rehabilitation and prevent relapses and recurrences of the illness. This paper focuses on primary prevention of mental disorders.

The distinction between mental health promotion and mental disorder prevention lies in their targeted outcomes. Mental health promotion aims to promote positive mental health by increasing psychological well-being, competence and resilience, and by creating supporting living conditions and environments. Mental disorder prevention has as its target the reduction of symptoms and ultimately of mental disorders. It uses mental health promotion strategies as one of the means to achieve these goals. Mental health promotion, when aiming to enhance positive mental health in the community, may also have the secondary outcome of decreasing the incidence of mental disorders. Positive mental health serves as a powerful protective factor against mental illness. However, mental disorders and positive mental health cannot be described as the different ends of a linear scale, but rather as two overlapping and interrelated components of a single concept of mental health (3). Prevention and promotion elements are often present within the same programmes and strategies, involving similar activities and producing different but complementary outcomes.

BUILDING THE EVIDENCE BASE FOR PREVENTION OF MENTAL AND BEHAVIOURAL DISORDERS

The call for evidence-based prevention and health promotion has triggered an international debate among researchers, practitioners, health promotion advocates and policy makers (4-12). Paraphrasing the definition of

evidence-based medicine by Sackett et al (13), evidence-based prevention and health promotion is defined as the "conscientious, explicit and judicious use of current best evidence in making decisions about interventions for individuals, communities and populations to facilitate the currently best possible outcomes in reducing the incidence of diseases and in enabling people to increase control over and to improve their health". Evidence from systematic research aims to avoid uncertainty in decisions due to lack of information, or decisions based on biased assumptions, which might in turn lead to wasting time and resources or investing in interventions with detrimental outcomes.

In supporting decision making, the use of scientific evidence becomes especially important when the implications of a decision are large, such as the choice of a new preventive programme for national implementation. Given the high costs and the pressure for accountability in spending public money, such a decision needs to be based on solid evidence, showing that the programme works and can produce a return in investment. For this, the use of evidence on the cost-effectiveness of given interventions is also crucial.

Different dimensions need to be taken into account when estimating the value of scientific evidence. First, evidence needs to be evaluated in terms of its quality, defined by the appropriateness of used research methods, to avoid biased observations and invalid conclusions. Several meta-analyses have found higher effect size in studies that use research designs rated as high in quality (5,14,15). Secondly, the value of the outcomes themselves, including the strength and type of effects, will also have to be appraised. Thirdly, the value of scientific evidence should be evaluated in terms of its actual use and impact for decision making. Finally, the value of the evidence will have to be combined with other indicators, also essential when considering the dissemination or adoption of prevention programmes, such as the transferability, feasibility and adaptability of programmes to other situations or cultures (16,17).

In evaluating the quality of the evidence, probably one of the "hottest" issues in the debate is whether randomized controlled trials (RCTs) should be considered the best design to warrant internal validity in complex interventions. Although the strength of RCTs is widely recognized and used in prevention research, many scientists in this field have expressed serious objections to accept this design as the one and only gold standard (6,12,18-23). RCTs are designed to study causal influences at individual level using mono-component interventions in a highly controlled context and thus are primarily suitable for evaluating clinical or preventive interventions at individual or family level. Many preventive interventions address whole schools, companies, communities or populations. They use multi-component programmes in a dynamic community setting, wherein many contextual factors are hardly controllable. The strict RCT design does not fit well in this context and, to retain its advantages in the context of community interventions, randomizations must be done at larger unit levels such as school classes, whole schools or communities. However, the feasibility of such randomized community designs is limited for practical, political, financial or ethical reasons. In those cases where, for example, ethical objections impede the use of randomization, quasi-experimental studies, using matching techniques to reach comparability between experimental and control groups, and time-series designs offer valuable alternatives.

The building of the evidence base requires a stepwise and incremental approach applying different methods depending on the information needed for a given decision. International exchange of evidence through common databases is essential for developing a strong evidence base, and for understanding the impact of cultural factors.

ADDRESSING RISK AND PROTECTIVE FACTORS

Risk factors are associated with an increased probability of onset, greater severity or longer duration of major health problems. Protective factors refer to conditions that improve people's resistance to risk factors and disorders: they have been defined as those factors that modify, ameliorate or alter a person's response to some environmental hazard that predisposes to a maladaptive outcome (24).

There is strong evidence on risk and protective factors and their links to the development of mental disorders (25,26). Both risk and protective factors can be individual, family-related, social, economic or environmental in nature. Mostly it is the cumulative effect of the presence of multiple risk factors, the lack of protective factors and the interplay of risk and protective situations that predisposes individuals to move from a mentally healthy condition to increased vulnerability, then to a mental problem and finally to a full-blown disorder.

Major socioeconomic and environmental determinants for mental health are related to macro-issues such as poverty, war and inequity. For example, poor people often live without the basic freedoms of security, action and choice that the better-off take for granted. They often lack adequate food, shelter, education and health; deprivations keep them from leading the kind of life that everyone values (27). Populations living in poor socioeconomic circumstances are at increased risk of poor mental health, depression and lower subjective well-being (28). Other macro-factors such as urbanization, war and displacement, racial discrimination and economic instability have been linked to increased levels of psychiatric symptomatology and psychiatric morbidity.

Individual and family-related risk and protective factors can be biological, emotional, cognitive, behavioural, interpersonal or related to the family context. They may have their strongest impact on mental health at specific sensitive periods along the lifespan, and even have impact across generations. Table 1 enumerates the main factors that have been found to be related to the onset of mental disorders.

Table 1 Risk and protective factors for mental health and mental disorders

Risk factors	Protective factors
Biological	*Psychological*
Chronic insomnia	Ability to cope with stress
Chronic pain	Ability to face adversity
Early pregnancies	Adaptability
Genetic risk factors	Autonomy
Low birth weight	Early cognitive stimulation
Medical illness	Exercise
Neurochemical imbalance	Feelings of security
Perinatal complications	Feelings of mastery and control
	Literacy
Psychological	Positive attachment and early bonding
Academic failure and scholastic demoralization	Problem-solving skills
	Pro-social behaviour
Attention deficits	Self-esteem
Communication deviance	Skills for life
Emotional immaturity and dyscontrol	Social and conflict management skills
Excessive substance use	Socioemotional growth
Loneliness	Stress management
Poor work skills and habits	
Reading disabilities	*Social*
Sensory disabilities or organic handicaps	Safe maternal behaviour during pregnancy
Social incompetence	Good parenting
	Positive parent-child interaction
Social	Social support of family and friends
Caring for chronically ill or dementia patients	Mental health promoting school and workplaces
Child abuse and neglect	Safe and supportive communities
Elder abuse	
Exposure to aggression, violence and trauma	
Family conflict or family disorganization	
Low social class	
Parental mental illness	
Parental substance abuse	
Personal loss – bereavement	
Stressful life events	
Substance use during pregnancy	

Preventive interventions should address malleable determinants, including disease-specific as well as more generic risk and protective factors, which are those common to several mental health problems and disorders. Interventions that successfully address such generic factors may generate a broad spectrum of preventive effects. There are also interrelationships between mental and physical health: for example, cardiovascular disease can lead to depression and vice versa. Mental and physical health can also be related through common risk factors, such as poor housing leading to both poor mental and physical health.

Major increase in understanding is needed of the relations between different mental disorders and between mental health and physical health, and of the developmental pathways of generic and disease-specific risk factors leading to mental ill-health. However, there is sufficient evidence to warrant governmental and non-governmental investments in the development, dissemination and implementation of evidence-based programmes and policies. Those interventions that address risk and protective factors with a large impact or that are common to a range of related problems, including social and economic ones, will be most cost-effective and attractive to policymakers and other stakeholders.

THE EVIDENCE ON MACRO-STRATEGIES TO REDUCE THE RISK OF MENTAL DISORDERS

Changes in policy, legislation, and resource allocation can provide countries and regions with substantial improvements in mental health of the population. In addition to decreasing the risk of mental disorders and improving mental health, such changes have also been proven to positively impact on the overall health, social and economic development of societies.

There is strong evidence that improving nutrition and development in socioeconomically disadvantaged children can lead to healthy cognitive development, improved educational outcomes and reduced risk for mental ill-health, especially for those at risk or who are living in impoverished communities. The most effective intervention models are those that include complementary feeding, growth monitoring and promotion. These models combine nutritional interventions (such as food supplementation) with counselling and psychosocial care (e.g., warmth, attentive listening) (29). Growth charts (which plot the weight of the child against the expected weight) have also been suggested to be cost-effective (30). In addition, iodine plays a key role in preventing mental and physical retardation and impairment in learning ability (30). Iodine supplementation programmes which iodize salt or water ensure that children obtain adequate levels of iodine. Global efforts such as those supported by the United Nations Children's Fund (UNICEF) have led to 70% of the world's households using iodized salt. This protects 91 million newborns from iodine deficiency (31) and indirectly prevents related mental and physical health problems.

Poor housing has been used as an indicator of poverty and targeted to improve public health and reduce inequalities in health. A recent systematic review on the health effects of housing improvement suggests a promising impact on physical and mental health outcomes. This includes improvements in self-reported physical and mental health and less mental health strain, as well as broader positive social impacts on factors such as perceptions of safety, crime and social and community participation (32).

Low literacy and low levels of education are major social problems in many countries, particularly in South Asia and sub-Saharan Africa, and tend to be more common in women. Lack of education severely limits the ability of individuals to access economic entitlements. While there have been impressive gains in improving literacy levels in most countries through better educational programmes targeting children, there is much less effort directed to today's adult illiterates. It is expected that pro-

grammes aimed at improving literacy, in particular targeting adults, may have tangible benefits in reducing psychological strain and promoting mental health. Ethnographic research in India, for example, has noted that literacy programmes have significant consequences beyond the acquisition of specific skills (33). By bringing women together in new social forms that provided them with information about and ideas from wider worlds, the classes were potential catalysts for social change. By participating in campaigns as volunteer teachers, impoverished literate women and girls gained a sense of pride, self-worth and purpose. The positive mental health impact was mediated through a number of pathways, including acquisition of numeracy skills which reduced the risk of being cheated, greater confidence in expressing one's rights and a reduction of barriers to accessing opportunities. All of these outcomes have been associated with protection against mental ill-health and reducing the risks for mental disorders.

In many developing countries, economic insecurity is a consistent source of stress and worry that can lead to symptoms of depression, mental disorders and suicide. Non-governmental organizations, such as the Bangladesh Rural Advancement Committee (BRAC), have developed programmes for poverty alleviation targeting credit facilities, gender equity, basic health care, nutrition, education and human rights issues. Provision of loans from such sources may reduce the risk of mental illness by removing a key cause of stress: the threat posed by the informal moneylender. An evaluation of the BRAC poverty alleviation programmes, which reach out to millions of the poorest people in Bangladesh, indicates that psychological well-being of women who are BRAC members is better than those who are not (34).

Many community interventions have focused on developing empowering processes and building a sense of ownership and social responsibility within community members. An example is the Communities that Care (CTC) Programme, which has been implemented successfully in several hundred communities in the USA and is currently being adopted and replicated in the Netherlands, England, Scotland, Wales and Australia. The CTC engages communities to implement violence and aggression prevention systems, through the use of local data to identify risks and develop actions (35). Action includes interventions working simultaneously at multiple levels: the community (e.g., media, policy change), the school (e.g., changing management or teaching practices), the family (e.g., parent training) and the individual (e.g., social competence).

Effective regulatory interventions for addictive substances that can be implemented at international, national, regional and local levels include taxation, restrictions on availability and total bans on all forms of direct and indirect advertising (36).

Price is one of the largest determinants of alcohol and tobacco use. A tax increase that raises tobacco prices by 10% reduces the consumption of tobacco products by about 5% in high income countries and 8% in low and middle income countries. Similarly for alcohol, a 10% increase in price can reduce the long-term consumption of alcohol by about 7% in high income countries and, although there are very limited data, by about 10% in low income countries (36). In addition, increases in alcohol taxes reduce the incidence and prevalence of alcohol-related liver disease, traffic accidents and other intentional and unintentional injuries, such as family violence and the negative mental health impacts due to alcohol consumption.

Laws that increase the minimum legal drinking age reduce alcohol sales and problems among young drinkers. Reductions in the hours and days of sale and numbers of alcohol outlets and restrictions on access to alcohol are associated with reductions in both alcohol use and alcohol-related problems.

THE EVIDENCE OF INTERVENTIONS TO REDUCE STRESSORS AND ENHANCE RESILIENCE

Targeting vulnerable populations to decrease stressors and to enhance resilience can be effective in preventing mental and behavioural disorders and in promoting mental health. The following sections present some evidence across the lifespan.

Infancy, childhood and adolescence

Evidence from home visiting interventions during pregnancy and early infancy, addressing factors such as maternal smoking, poor social support, parental skills and early child-parent interactions, has shown health, social and economic outcomes of great public health significance (37). These include improvement of mental health both in the mothers and the newborns, less use of health services, and long-term reductions in problem behaviours after 15 years. These interventions can be also cost-effective when long-term outcomes are taken into account.

The Prenatal and Infancy Home Visiting Programme (38,39), a two-year nurse home visiting programme for impoverished adolescents pregnant for the first time, is an effective example with benefits both for the mothers and the newborns. RCTs showed reductions in low birth weight (increase of up to 400 g), a 75% reduction in preterm delivery, more than a two-fold reduction in emergency visits, and a significant reduction in child abuse among unmarried teens. Mothers showed an 82% increase in employment, and postponed their second child by more than 12 months. When children were 15 years of age, they were 56% less likely to have problems with alcohol or drugs, and reported 56% fewer arrests, 81% fewer convictions and a 63% reduction in the number of sexual partners. Families were better off financially and the government's costs for such families

more than compensated for the programme's cost (38-41). However, not all home visiting programmes with nurses and social workers have been found to be effective (42), stressing the need to identify factors that predict intervention efficacy.

Interventions for children from impoverished families to enhance cognitive functioning and language skills have produced improved cognitive development, better school achievement and fewer conduct problems. The High/Scope Perry Preschool Project, for example, found benefits up to ages 19 and 27 on lifetime arrests (40% reduction) and a seven-fold economic return on the government's investment in the programme (43,44).

Parent management training programmes have also shown significant preventive effects, like the "The Incredible Years", which provides a behaviourally-based intervention that increases positive interactions between the child and the parent, improves the child's problem-solving behaviour and social functioning, and reduces conduct problems at home and school. The programme uses videotape modelling methods and includes modules for parents, school teachers and children (45,46).

Only two types of proactive strategies have proven some efficacy in preventing or reducing child abuse: home visiting programmes for high-risk mothers and self-defence programmes for school-aged children to prevent sexual abuse (47). Home visiting programmes, like the Prenatal and Infancy Home Visiting Programme described above, have shown, during the first two years, a drop of 80% of cases of verified child abuse or neglect. Self-defence programmes provide children with knowledge and skills to prevent their own victimization. These school-based programmes are widely implemented in the USA in primary schools. Well-controlled trials have shown that children do better in terms of knowledge and skills (48). However, no evidence from these programmes is yet available on reducing the rate of child abuse.

Children of parents with mental illness, for example children of depressed parents, are at as much as 50% risk of developing a depressive disorder before age 20 (49). Evidence indicates that the transgenerational transfer of mental disorders is the result of interactions between genetic, biological, psychological and social risk factors from as early as pregnancy and infancy (50). Interventions aimed to prevent transgenerational transfer address risk and protective factors such as the family's knowledge about the illness, psychosocial resilience in children, parent-child and family interactions, stigma and social network support. Controlled outcome studies on such programmes are still scarce, although promising, such as an RCT on a cognitive-oriented group programme, showing a decrease in new and recurrent depressive episodes from 25% in the control group to 8% in the prevention condition over the first year after the intervention, and from 31% to 21% respectively over the second follow-up year (51).

School-based programmes through social-emotional learning and ecological interventions improve mental health (52). Some interventions target the whole school in an integrated approach across years, while other interventions target only one part of the school (e.g., children in a given grade) or a specific group of students identified to be at risk. Outcomes have included academic improvement, increased problem-solving skills and social competence, as well as reductions in internalizing and externalizing problems such as depressive symptoms, anxiety, bullying, substance use and aggressive and delinquent behaviour.

Ecologically-focused interventions address contextual variables in the child's home or school. Programmes that restructure the school environment (e.g., School Transitional Environment Project) (53), influence the classroom climate (e.g., Good Behavior Game) (54) or the whole school climate (e.g., Norwegian Bullying Prevention Programme) (55) have shown to improve emotional and behavioural functioning and to prevent or reduce symptoms and associated negative outcomes.

Adolescents of divorced parents exhibit higher levels of school drop out, teen pregnancies, externalizing and internalizing problems, and a higher risk of divorce and premature mortality. Effective school-based programmes for children of divorced parents (e.g., Children's Support Group, Children of Divorce Intervention Programme) teach specific cognitive-behavioural coping skills, provide social support and reduce stigmatization, and have led to decreases in depressive symptomatology and behaviour problems at one-year follow-up (56-58). Parent-focused programmes to improve parenting skills and deal with emotions associated with divorce have improved mother-child relationship quality and reduced internalizing and externalizing problems in the children. One six-year randomized follow-up study revealed a difference in prevalence of mental disorders, where 11% of the adolescents in the experimental group had a one-year prevalence of diagnosed mental disorders, compared with 23.5% in the control group (59).

Parental death is related to higher symptoms of anxiety and depression, including clinical depression, behaviour problems and lower academic success. Although there are many interventions available for children suffering from bereavement, only a few have been evaluated in controlled trials (58). A successful example is an intervention targeting simultaneously children, adolescents and surviving caregivers, which led to positive parent-child relations, coping, caregiver mental health, discipline and sharing of feelings (60). Effects were stronger for those children who were more at risk, that is, those already showing symptoms at the start of the programme.

Adulthood

Work stress and unemployment can contribute to poor mental health and increase the incidence of depression, anxiety, burn-out, alcohol-related problems, cardiovascular illness and suicidal behaviour.

To reduce work stress, interventions may be directed at either increasing the coping capacity of the employee or at reducing stressors in the work environment. Three types of strategies can address work conditions: task and technical interventions (e.g., job enrichment, ergonomic improvements, reduction of noise, lowering the workload), improving role clarity and social relationships (e.g., communication, conflict resolution) and interventions addressing multiple changes directed both at work and employees. Notwithstanding the existence of national and international legislation with respect to the psychosocial work environment, which puts the emphasis on risk assessment and risk management, most programmes aim at reducing the cognitive appraisal of stressors and their subsequent effects, rather than at the reduction or elimination of the stressors themselves (61).

The most well-known universal interventions in response to job loss and unemployment tend to be legal policies governing unemployment insurance and welfare assistance or policies associated with improving job security. Their availability varies dramatically across different parts of the world. A variety of workplace policies are available to reduce the risk of job loss and unemployment, including job sharing, job security policies, cutbacks on pay and reduced hours. No empirical evidence is available on their potential to protect the mental health of employees, although their power to reduce stress related to unemployment is quite obvious.

A number of interventions support unemployed workers returning to paid employment, such as the Job Club and the JOBS Programme (61). These low-complexity and low-cost programmes combine basic job search skills with enhancing motivation, coping skills and social support. The JOBS programme has been tested and replicated in large-scale randomized trials in the USA (62-64) and Finland (65), showing increased rates of re-employment, better quality and pay of jobs obtained, increases in job search self-efficacy and mastery, and reductions in depression and distress.

Caregivers of chronically ill and elderly are at increased risk of suffering from high levels of stress and incidence of depression. Outcomes across a large range of controlled intervention studies on psycho-educational interventions for family caregivers of older adults have shown significant improvements in caregiver burden, depression, subjective well-being and perceived caregiver satisfaction (66). Psycho-educational interventions include providing information on the care receiver's disease and available resources and services, and training to respond effectively to disease-specific problems. Such interventions make use of lectures, group sessions and written materials.

Older populations

Different types of interventions have been successful to different degrees in improving the mental health of older populations, including exercise, improving social support through befriending, patient education among chronically ill elderly and their caregivers, early screening, interventions in primary care and programmes using life review techniques. Preventing craniocerebral traumas, high systolic blood pressure and high cholesterol levels seem also to be effective in reducing the risk of dementia.

For example, exercise, such as aerobic classes and Tai chi, provide both physical and psychological benefits in older populations, including increased life satisfaction, positive mood states and mental well-being, reductions in psychological distress and depressive symptoms, lower blood pressure and fewer falls (67).

Other interventions, although having shown promising effects, call for replication studies: for example, early geriatric screening and case management, including social services provision, as means to decrease depression and increase life satisfaction (68).

Although depression is common among the elderly, almost no controlled studies exist on depression prevention and suicide prevention for this group. Some evidence is available pointing at improved social relationships and fewer depressive symptoms among participants in a programme involving widows supporting other widows. Preliminary evidence is also suggesting that life review meetings and reminiscence therapy might reduce the risk of depression in the elderly, especially among nursing home residents (69), although benefits seem to disappear over time, suggesting the need for continued support.

Depression is also common in those who suffer from chronic or stressful physical conditions, but only a few examples of effective interventions exist in this area. Patient education techniques that teach about the prognosis and management strategies to deal with chronic conditions have shown short-term beneficial effects like reductions in depressive symptoms (70). Providing hearing aids to elderly people with hearing loss might also lead to better social, emotional and cognitive functioning and reductions in depression (71).

FROM EVIDENCE TO POLICY AND PRACTICE

The evidence generated over the last few decades and briefly summarized above shows that it is possible to reduce the risk of mental ill-health and prevent mental disorders. The critical task then is to facilitate the use of this evidence for policy and practice. This section briefly describes some of the steps and factors that can facilitate international, national and local efforts for prevention of mental and behavioural disorders.

International

Global advocacy is needed to enhance awareness and credibility of prevention efforts in mental health. The available evidence and information needs to be disseminated widely to policy makers and also to general public. Current

knowledge and resources in prevention of mental disorders and mental health promotion are unevenly distributed around the world. International initiatives are needed to support countries that still are lacking capacity and expertise in this field. International training initiatives should be undertaken in collaboration with international organizations that already have the capacity for and experience of such initiatives, especially in middle and low income countries.

To strengthen the knowledge base, the capacity for prevention research, especially through international collaboration, needs to be expanded. This should include the development of a network of collaborating research centres responsive to the needs of low, middle and high income countries. Special attention of researchers is needed for: multisite and replication studies on the cultural sensitivity of programmes and policies; longitudinal studies to test the long-term impact of preventive interventions; research on the interrelatedness of mental, physical and social health problems; cost-effectiveness studies to identify the most efficient strategies and the value of prevention beyond its mental health benefits; and studies identifying effect predictors in order to improve effectiveness.

National

Governmental agencies need to develop national and regional policies on prevention of mental disorders and mental health promotion as part of public health policy and in balance with treatment and rehabilitation. Public policy approach should encompass horizontal actions through different public sectors, such as the environment, housing, social welfare, labour and employment, education, criminal justice and human rights protection. Governments should enhance national coordination of initiatives, practices and professionals for a more efficient use of resources.

Governments need to develop national and local infrastructures for prevention and promotion to work in collaboration within other public health and public policy platforms. Governments and health insurance companies should allocate appropriate resources for the implementation of evidence-based action, including: supporting capacity building across multiple sectors with assigned responsibilities; funding training, education, implementation and evaluation research; and stimulating coordination of the different sectors that are related to mental health.

High levels of comorbidity among psychiatric disorders and physical ill health call for integrated prevention strategies within primary and secondary health care. Supportive policies for prevention in primary and secondary care are needed, along with increased resources and training.

To sustain public health benefits over a longer period of time, it is crucial to develop communities' accountability to support sustainable strategies within health agencies. Governmental authorities and providers should select programmes and policies that can build on existing infrastructures and resources. Mental health promotion and prevention components should be structurally integrated with existing effective health promotion programmes and social policies in schools, workplaces and communities.

Local

Prevention policies need to be based on systematic assessments of public mental health needs. To enlarge the impact of preventive interventions on the mental health of whole populations, interventions that have the capacity to have a large reach in such populations need to be developed. Programme developers and providers need to be guided by evidence-based principles and conditions that can increase effectiveness and cost-effectiveness and can improve simultaneously mental and physical health and generate social and economic benefits.

Cultural adaptation and tailoring needs to be undertaken by service providers, especially when evidence-based programmes are adopted from other countries or cultures, or when they are implemented in communities and target populations that differ from the ones in which they were originally developed and tested. Although culturally modified, adaptations should be guided by principles of effective intervention and implementation. More insight needs to be developed into the transferability, opportunities for adaptation and reinvention of evidence-based programmes and policies across countries and cultures.

Practitioners and programme implementers are urged to ensure a high quality of programme implementation and to make use of tools to improve and ensure programme implementation with fidelity, such as manuals for programme provision, guidelines for effective implementation, training and supervision.

ROLES AND RESPONSIBILITIES OF MENTAL HEALTH PROFESSIONALS

Mental health professionals, including psychiatrists, psychologists, psychiatric nurses, social workers and other professionals with training in mental health, can and need to play a variety of roles to make prevention of mental and behavioural disorders a reality. These can be briefly summarized as follows.

As advocates

Mental health professionals are well placed to increase awareness and information on prevention among policy makers, other professionals and the general population, to create an environment that is more conducive to prevention efforts. Mental disorders are currently widely understood to be without recognizable causes and generally non-preventable. Correct information on the known causes and possible

methods to decrease the incidence and improve the course of mental disorders needs to be made available widely to remove these myths.

As technical advisers on prevention programme development

Because of their knowledge base, mental health professionals need to advise public health planners and programme developers on the possibilities of initiating prevention interventions or integrating mental health components into existing programmes. The possibilities for this role are enormous, since most countries and communities have public health and social programmes that can serve the cause of prevention of mental disorders. Even if no changes are needed, an awareness that the programme may be having an impact on prevention of mental disorders helps to reinforce the need for the programme to be continued or expanded.

As leaders or collaborators in prevention programmes

In many cases, mental health professionals need to take an active role in initiating prevention programmes. This role can be as a leader or as an active collaborator, especially in an intersectoral programme. Some of the most effective prevention programmes have been initiated by mental health professionals working in close collaboration with other professionals.

As researchers

Mental health professionals need to take the challenge of further research on prevention of mental disorders. It is known that research on mental health as a proportion of overall research in health is far less than the proportionate burden of mental disorders; such research from low and middle income countries is even rarer (72-74). Even within the available mental health research, prevention research is scant. Mental health professionals and researchers need to correct this imbalance and create a better evidence base especially from low and middle income countries. Evidence base is particularly lacking on real world implementation, a gap that can be bridged by integrating a systematic evaluation component within existing prevention programmes. To overcome funding shortcomings, innovative proposals, especially if intersectoral in nature and targeted on multiple outcomes, are likely to generate increasing interest from potential funding agencies.

As professional care providers

Mental health professionals come in close contact with people with mental disorders and their families. The opportunities for primary prevention in these settings are enormous. People with one or more mental disorders (either active or in remission) are more likely to develop another mental disorder. Preventive interventions among these people, even though they may be in contact with mental health professionals, are often ignored. Examples include prevention of depression among people with a substance use disorder or of emotional disorders in a child with a specific developmental disorder.

Another way mental health care providers can assist in prevention efforts is by initiating prevention interventions in family members of those taking mental health care. Preventive approaches for children of parents with a diagnosed mental disorder, who are particularly at risk, can be highly effective but unfortunately not applied often. Mental health professionals need to balance their role of providing much needed care to the patients who are under treatment with preventing future need for care among their families.

CONCLUSIONS

Prevention of mental disorders is a public health priority. In view of the high and increasing burden of mental and behavioural disorders and the recognized limitations in their treatment, the only sustainable method for reducing their burden is prevention. Social and biological sciences have provided substantial insight into the role of risk and protective factors in the developmental pathways to mental disorders and poor mental health. Many of these factors are malleable and potential targets for prevention and promotion measures. There is a wide range of evidence-based general policies and strategies available for implementation to prevent mental and behavioural disorders in addition to those that are specific to particular disorders. Preventive strategies have been found to reduce risk factors, strengthen protective factors, decrease psychiatric symptoms and the onset of some mental disorders; they also contribute to better mental and physical health and generate social and economic benefits.

Although sufficient evidence warrants implementation, further efforts are needed to continue expanding the spectrum of effective preventive interventions, to improve their effectiveness and cost-effectiveness in varied settings and to continue strengthening the evidence base. This requires a process of repeated evaluation of programmes and policies and their implementation in addition to more controlled research studies.

Mental health professionals have several important roles to play in the prevention field. These include their roles as advocates, technical advisers, programme leaders, researchers and preventive care providers. These are challenging but likely to be very rewarding responsibilities. However, population-based outcomes can only be expected when sufficient human and financial resources are invested. Financial support should be allocated to the implementation of evidence-

based prevention programmes and policies and to the development of required infrastructures. In addition, investments in capacity building at the country level should be promoted, providing training and creating a workforce of informed professionals. Much of this investment will need to come from governments, as they have the ultimate responsibility for population health. Current resources for prevention of mental disorders and mental health promotion are unevenly distributed around the world. International initiatives are needed to reduce this gap and to support low income countries in developing prevention knowledge, expertise, policies and interventions that are responsive to their needs, culture, conditions and opportunities.

Prevention of mental disorders and mental health promotion need to be an integral part of public health and health promotion policies at local and national levels. Prevention and promotion in mental health should be integrated within a public policy approach that encompasses horizontal action through different public sectors, such as the environment, housing, social welfare, labour and employment, education, criminal justice and human rights. This will generate "win-win" situations across sectors, including a wide range of health, social and economic benefits.

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