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Primary Prevention in Mental Health – Current Evidence and Future Directions [a)]

Prevenção Primária em Saúde Mental – Evidência Actual e Direções Futuras

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ABSTRACT

Background: Preventive interventions, including primary prevention, have been a part of medical practice since ancient times. Mental disorders represent a significant burden for patients, family and society, and existing treatments are still limited in reducing this debilitating outcome. Recently, increasing research has been published in primary prevention in mental health, gathering awareness for this therapeutic approach.

Aim: To review current evidence about primary prevention in psychiatry and to reflect about future directions.

Methods: Non-systematic literature review through PubMed database, searching articles published between January 2000 and July 2021. The keywords used were "primary prevention", "mental disorders" and "promotion". Articles were selected according to their relevance.

Results: Current evidence supports the efficacy of universal, selective and indicated prevention, as well as the promotion of mental health. These interventions were shown to be cost-effective and capable of shifting the debilitating trajectories of major mental disorders, usually associated with an elevated burden. Security and feasibility have been ensured in these investigations. Despite these encouraging results, clinical practice is still far from incorporating primary prevention in daily work. The goals of prevention can only be achieved with collaboration from different sectors and stakeholders, in a coordinated manner. Mental health professionals need to take part as advocates in this process and services must encourage research and interventions according to their framework of action. Child and adolescent psychiatry services emerge as a fundamental element in prevention in young people at-risk.

Conclusion: Primary prevention is increasingly being recognized as an essential tool to address the high burden of mental disorders. Mental health organizations, public health, policy makers and society should work together to further implement this evidence-based and cost-effective strategy.

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RESUMO

***Introdução**: Intervenções preventivas, incluindo a prevenção primária, fazem parte da prática médica desde a antiguidade. As perturbações mentais representam uma significativa carga para os doentes, as famílias e a sociedade, e os tratamentos existentes são ainda limitados na melhoria deste encargo. Recentemente, um número crescente de estudos têm sido publicados sobre prevenção primária em saúde mental, relevando atenção para esta ferramenta terapêutica.*

***Objectivo:** Rever a evidência actual sobre prevenção primária em psiquiatria e refletir sobre o seu futuro.*

***Métodos**: Revisão não-sistemática da literatura, utilizando a base de dados Pubmed. Foram procurados artigos publicados entre janeiro de 2000 até julho de 2021, utilizando as palavras-chave "primary prevention", "mental disorders" e "promotion". Os artigos foram selecionados de acordo com a sua relevância para o objeto de estudo.*

***Resultados**: A evidência científica atual apoia a eficácia da prevenção universal, seletiva e indicada, assim como a promoção da saúde mental. Estas intervenções mostraram ser custo-efetivas e capazes de alterar a trajetória das perturbações mentais, especialmente aquelas com uma elevada carga de doença. Tanto a segurança como a viabilidade destas medidas foram comprovadas. Apesar destes resultados encorajadores, a prática clínica encontra-se ainda longe de incorporar a prevenção primária no seu quotidiano. Os objetivos da prevenção apenas podem ser atingidos com o apoio de diferentes sectores e intervenientes a trabalhar de forma coordenada. Os profissionais de saúde mental e os serviços locais de saúde mental devem articular-se de forma a estimular a investigação e a adoção de intervenções integradas no seu modelo de ação. Serviços de psiquiatria da infância e da adolescência destacam-se como um elemento fundamental na atuação sobre a prevenção de jovens em risco.*

***Conclusão**: A prevenção primária está progressivamente a ser reconhecida como uma ferramenta essencial no combate à elevada carga de doença em psiquiatria. Organizações de saúde mental, saúde pública, intervenientes políticos e a sociedade em geral devem trabalhar em conjunto na implementação destas medidas baseadas na evidência e custo-efetivas.*

***Palavras-chave**: Prevenção primária; Perturbações mentais; Promoção.*

INTRODUCTION

Prevention is as old a concept as medical practice itself, despite that, only recently has it become reinforced by better knowledge of risk factors and causal mechanisms that lead to disease.

After their onset, mental disorders usually have a chronic course, leading to reduced functionality, social isolation, less access to labor, discrimination, stigma and, in severe cases, human rights violation[1]. Likewise, mental disorders are associated with a considerable global burden of disease (GBD). Recent data

shows that mental illness appears in the top three causes of GBD, accounting for 9,8% of disability-adjusted life years and 32,4% years lived with disability overall[2]. People with mental disorders are at higher risk of morbidity and mortality by any cause, in comparison with the general population, dying 10-20 years younger than their peers in high-income countries and 30 years younger in low-income countries[1-2].

Unfortunately, despite these alarming figures, our current treatment modalities have a limited effect on reducing this burden[3]. Preventive approaches in psychiatry have emerged only a few decades ago, far behind somatic medicine, but are increasingly gaining recognition as a way to tackle this problem[4].

AIM

To review current evidence about primary prevention in Psychiatry and to reflect about future directions.

METHODS

Non-systematic literature review through PubMed database, searching articles published between January 2000 and July 2021. The keywords used were "primary prevention", "mental disorders" and "promotion". Articles were selected according to their relevance. Additional references were searched in the selected articles

RESULTS

1. Primary Prevention in Mental Health

Classification of prevention in medicine classically started with the work of Leavell and Clark on syphilis, in the middle 20th century, dividing intervention in a pre-pathogenic phase – primary prevention, and a pathogenic phase - secondary and tertiary prevention. Later, Caplan in 1964, applied these earlier concepts to mental health: a) primary prevention – "aims at reducing the incidence of new cases of mental disorder and disability in a population"; b) secondary prevention – "aims at reducing the duration of cases of mental disorders"; c) tertiary prevention – "aims at reducing the community rate of residual defect". Gordon, in 1983, reflected about the terms used by public health in prevention and found that they had little correspondence with the interventions and proposed a subclassification in primary prevention based on the costs and benefits of providing the intervention: a) universal prevention – measures that are applicable to all the population, in many cases, applicable outside specialized care; b) selective prevention – interventions that can be recommended only when the individual has specific factors that make him at risk of becoming ill compared to the general population; c) indicated prevention – measures that are used only in persons who display a condition or abnormality that makes them at high risk of developing a disorder or disease[1].

Despite the clear advances in the conceptual field, Gordon's classification was not designed for use in mental health. However, in 1994, the United States Institute of Medicine recognized the specificities of psychiatry, namely the frequency of mental health symptoms even if diagnostic criteria are not met, and the importance of further development in this area[5]. This enabled indicated interventions to potentially target initial stages of the disorder, such as clinical high-risk syndromes. This was im-

portant as it increased the available evidence in the field.

In general, requisites of prevention screening are identifiable risk and, or protective factors linked to a disorder, availability of a validated screening tool, an effective intervention that improves outcomes, guidelines on pathways to care following screening, good acceptability by the population and feasible implementation/ dissemination on the field[1]. The interventions developed, aim to modify risk exposure and strengthen protective factors. This also highlights the importance of the correct identification of causal risk factors that can be shared by several disorders (generic risk factors) and disease-specific risk factors[2].

The main objective of prevention in mental health is to reduce incidence, prevalence and recurrence of psychiatric disorders, which will reduce their burden[6].

1.1 Promotion of Mental Health

In recent years, the World Health Organization (WHO) has advocated not only for prevention but also for promotion of mental health. In their definition, mental health refers to a "state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community"[7]. This is obviously a broad concept that can be related with people in mental distress, but it can also be applied to people without it. Good mental health is not the absence of a mental disorder, so promotion of good mental health is different from prevention of poor mental health, but both have identical aims[8].

Examples of dimensions that promote good mental health encompass: mental health literacy, positive attitudes towards mental disorders, cognitive skills, academic or occupational performance, emotion expression, resilience, social skills, family and significant relationships, physical health, sexual health and meaning of life. These dimensions can be intervened in all stages of mental health prevention, even in severe mental disorders, as a way to improve the symptom-oriented approach[7].

Several interventions have been tried to promote good mental health in healthy individuals, namely psychoeducation, psychotherapy, physical therapy and art therapy. A recent meta-analysis has found medium effect-sizes for interventions in mental health literacy and regarding emotions, and small effect-sizes in interventions for attitude towards mental disorders, self-perceptions and values, cognitive skills, occupational performance, social skills, physical health, sexual health and quality of life[9].

However, some authors argue that, despite the utility of this concept, there is still a lack of consensus of what good mental health really is, how it can be measured and therefore researched. This also contrasts with the disease-oriented mental health services that dominate psychiatry and the rarity of services that implement strategies in mental health promotion[1].

1.2 Neurodevelopment and Critical Periods

The pathophysiology of mental disorders is generally understood to come from several genetic and non-genetic risk factors that interact

with each other and impact neurodevelopment and brain function[3].

A striking data in mental health research is that about 50% of mental disorders start before the age of 14 years, and that 75% start before the age of 24 years[10]. Bearing this in mind, primary interventions need to seize this window of opportunity and intervene early in the life course of an individual, diminishing the high burden of established mental disorders.

Exactly how early do the interventions need to be? Evidence shows that, during the lifespan, there are critical periods where risk factors and protective factors could have greater effects and long-lasting consequences. This means that vulnerable periods frequently overlap with intervals of major neurodevelopmental changes[1]. Considering embryology and the development of the brain, these sensible times expectedly begin during the prenatal period, where the intrauterine environment can shape gene expression related to neurodevelopment, through interactions later explained[11]. Furthermore, research also tells us that exposure to stress in the postnatal period and early childhood (for example, child abuse, malnourishment or neglect) can lead to detrimental outcomes in physical and mental health[3]. This is also a vital period for the development of secure attachment[10]. During adolescence, where several mental disorders show their first signs, it is especially important to prevent substance abuse and promote good mental health[3].

As an example, in psychosis : the "two hits hypothesis" states that there are "first wave hits" during the embryonic, fetal and first year after birth periods, which affect the brain maturation; and also "second wave hits" from mid-childhood until mid-20s, where significant neurobiological changes arise and also where the risk of disorder onset is the highest[12].

Albeit these critical neurodevelopmental periods, there is a myriad of possible trajectories, given the pluripotentiality of the nervous system, so that change is possible at any given time, even during the process of becoming ill[3].

1.3 Types of Primary Prevention

As mentioned before, primary prevention interventions target risk factors and promote mental health in individuals without a diagnosable mental disorder[1]. These interventions, according to the current WHO framework, can be divided into universal (for the whole population), selective (a subpopulation known to be at risk) and indicated (individuals showing subthreshold clinical manifestations)[6].

When we talk about risk factors, usually they are divided into genetic and non-genetic (or environmental)[12]. In most cases these have, , small effect sizes, only explaining an increase in susceptibility, but are insufficient to explain the development of a disorder[1]. Most often risk factors are interrelated and tend to cluster together. Therefore, this leads to increased vulnerability that consequently leads to the occurrence of more risk factors, in a vicious cycle[3]. This also explains why it is so complex to disentangle the interaction between individual and environment in finding specific risk and protective factors. This complexity also shows that effective preventive measures need to address different dimensions (e.g. psychological, societal, biological or familial)[13].

1.3.1 Universal Prevention

These interventions address risk and protective factors at the general population level[6]. The most established universal measures are those towards social determinants of mental disorders, using a public health framework[14]. The current knowledge is unanimous in recognizing that factors like demography (e.g. community diversity), economy (e.g. poverty), neighborhood (e.g. deprivation), environmental events (e.g. war) or culture, have a strong effect on the development of mental disorders[14]. The interventions that address these issues depend more on the political power than on clinicians. Programs that target child maltreatment, domestic violence, racial discrimination, improved employment and education, are examples that can potentially lead to a high benefit long-term[3,15]. A problem in advocating for these issues is the long latency between an intervention (exposure) and the expected outcome, which also hinders research[1].

Another field of investigation in universal prevention is the possibility of using dietary supplements in pregnant women, addressing critical neurodevelopmental periods[3]. One of the most studied, with encouraging results, is phosphatidylcholine, an alpha-7 nicotinic receptors agonist, involved in early neurodevelopment, thought to be implicated in schizophrenia. Also, folate, vitamin D and polyunsaturated fatty acids have been suggested to be effective in neuroprotection, but evidence is still weak[16].

Universal psychological interventions and psychoeducation have been tried in different settings with favorable results in reducing symptoms, however real-world applicability is an issue[17]. Programs that impact school climate overall, have also shown improvement of depressive and anxiety symptoms, but without effect on incidence[1]. Parenting interventions have also shown positive effects in the development of the child (cognitive, social and motor)[3]. In table I examples of interventions in universal prevention are illustrated.

The exposure to population-level protective factors has been covered previously, in promoting good mental health.

1.3.2 Selective Prevention

As previously mentioned, these interventions target at-risk groups before the initiation of symptoms[6]. As in the previous section, the aim is to tackle identified risk factors. For this purpose, it is relevant to distinguish genetic from non-genetic risk factors. Regarding genetic risk factors, the genetic variants that were identified as being associated with mental disorders have small effect sizes and therefore might be irrelevant in terms of prevention[1]. The only exception may be the 22q11.2 deletion syndrome in which patients have high rates of schizophrenia[20]. In terms of non-genetic risk factors, the evidence is characterized by several biases which confound the picture[3]. However, interventions in the prenatal and postnatal period have shown positive effects, in particular in women who develop psychopathology. Another important at-risk group are the children of parents with mental illness or substance use disorder, who have a very high risk of developing mental disorders, especially in parents with psychot-

Table I. Examples of interventions in universal prevention.

Intervention	Description	Results
Psychological and educational interventions for anxiety[17]	A systematic review of 29 randomized clinical trials, representing 10430 patients.	Showed a small but statistically significant benefit, with pooled standardized mean difference (SMD) of -0,31.
School-based anti-*bullying* interventions[18]	A systematic and meta-analytic review of 44 reports.	A reduction in *bullying* and victimization of about 20%.
Physical activity[19]	A meta-analysis of 14 prospective cohort studies	Self-reported physical activity reduced adjusted odds-ratio for developing anxiety disorders.

Table II. Examples of interventions in selective prevention.

Intervention	Description	Results
Prevention of depression in the offspring of parents with depression[22]	A systematic review and meta-analysis of 14 publications, with 935 patients.	Small, but statistically significant effect on depression incidence (risk ratio of 0,56).
Psychological interventions for women experiencing intimate partner violence[23]	A systematic review and meta-analysis of 15 studies	Improved anxiety in comparison to the control group (no effect on depression or post-traumatic *stress* disorder).
Preventive interventions in the offspring of mentally ill parents[24]	A systematic review and meta-analysis of 13 studies, with 1490 children.	Interventions reduced the risk of new diagnosis by 40%.

ic disorders[21]. Examples of interventions in selective prevention are given in Table II.

1.3.3 Indicated Prevention

It addresses individuals with subthreshold manifestations of mental disorders, which in some cases means the earliest clinical signs of possible pathology[6]. Some authors argue that these measures might be more cost-effective, as they minimize the number of people exposed to an intervention and detect individuals on the verge of becoming ill[3]. This is supported by some meta-analyses that indicate that it may be more effective than universal prevention, but other meta-analyses found no differences[3,15] Some examples of interventions are given in Table III.

Indicated prevention is probably the best studied area in primary prevention, especially in psychosis. Clinical high risk for psychosis is a concept that has been highly debated in recent decades and several programs that aim to reduce the transition rate to psychosis have been developed, with cognitive behavioral therapy (CBT) being the most supported intervention in guidelines[25]. Several studies have been undertaken addressing interventions for bipolar disorder, depression and anxiety subthreshold clinical pictures, but none have shown utility in reducing incidence of these disorders

Table III. Examples of interventions in indicated prevention.

Intervention	Description	Results
Prevention of depression and anxiety disorders in children showing early manifestations of internalizing disorders[27]	A meta-analysis of 42 studies	Number needed to treat of ten for an anxiety diagnosis.
Clinical high-risk for psychosis[25]	A recent review of 42 meta-analyses	No evidence was found that favored any indicated intervention over another (needs based-intervention or psychological intervention).

(despite most of them showing reduction in symptomatology)[1]. CBT in patients presenting acute stress symptoms after a traumatic event, has been shown to be effective in preventing chronic post-traumatic stress disorder[26].

1.4 Cost-effectiveness

The interventions previously discussed seem, at first glance, extremely valuable for society in preventing chronic, debilitating conditions that start early in life. However, it is not enough to know that interventions are effective. The costs of investing money and human resources must clearly show the trade-off benefits. We know that public health practices are supported by cost-effectiveness analyses and this is highly beneficial in political discussions (moreover in deciding about measures that only have effects in the long term). This analysis has mainly been undertaken in anglo-saxon countries. For instance, in the United Kingdom, it has been shown that for every dollar spent on mental health promotion and prevention, the total societal return of this investment over a 10-year period is 83,73 dollars for conduct disorder and 10,27 dollars for indicated prevention in psychosis. School-based interventions to prevent bullying have also shown substantial savings in the long term, of about 10,67-16,79 dollars for each dollar spent in prevention, by age 21 years[28]. Also, research about the economic results of preventive strategies for postpartum depression have highlighted substantial gains per case intervention[3].

1.5 Barriers and Limitations

Psychiatry still lacks biomarkers for the disorders it treats, hindering a more specific approach for at-risk groups[3]. This inevitably leads to interventions that target more generic risk factors and therefore are more prone to have a high number of false positives[3]. This exposes a considerable number of individuals to an intervention that otherwise would not be necessary and that can even be iatrogenic. One example is disclosure, which in these circumstances should be done with great caution, both to the patient and family, so that self-esteem and future projects are not harmed by possible early labelling. Also, indicated prevention programs, such as clinical high risk for psychosis, have been criticized for not being able to detect up to 95% of the people who will develop a psychotic disorder, with a low sensitivity[29]. Finally, the elevated costs

associated with programs that target a large number of the population can be a limitation. This means that we should be careful in developing our preventive strategy, gathering solid evidence, selecting interventions that can be safely implemented and where the cost-effectiveness will be easily measured.

Bearing this in mind, some authors argue that universal prevention like promotion of mental health, physical activity, reducing child abuse and bullying would be the first areas to prioritize, giving its very low risks and easy implementation.

Despite a clear evidence-based benefit, there is a lack of awareness by public and political authorities for the clinical implications and substantial economic savings. There may be several explanations for this: a) these measures need several years for the "return of the investment" to be noted, being less attractive for politicians who run four or five year term and hindering a perception of efficacy; b) stigma that surrounds mental health and limits the idea that this is a field worth investing in, focusing on more enhanced areas of medicine in the publics' opinion (e.g. cardiovascular disease or oncology); c) the initial high investment of the interventions and the need for training of professionals can also be a difficulty in gaining political support; d) the notion that mental disorders do not correlate with mortality, so that there are other areas that should be prioritized; e) mental health prevention research has been more focused on clinical outcomes, but other sectors like education or employment should be included, allowing multisectoral investment; f) indicated prevention success can be hampered by a delay in help-seeking behavior, as a result of stigma and anticipated discrimination; g) lack of validated screening tools and interventions in some areas of prevention[3]

1.6 Mental Health Professionals' Role

Professionals should have a leading role in advocating for more and better prevention of mental health disorders. This implies that clinicians are ready to address several issues in their practice:

a) training – there is a need to disseminate current knowledge about the prevention of mental disorders and promotion of good mental health in undergraduate and graduate professionals. This field needs to be incorporated in graduation programs, tackling the widespread vision that there are no recognizable causes and that these disorders are non-preventable. Training in this field should also be addressed in other sectors, as mentioned previously, like in education, social security and economy. Bearing this in mind, mental health specialists are again in a privileged position to increase awareness and gain further support.
b) research – despite recent advances, with well-developed investigations in this area, evidence is still at its infancy and represents the minority of the already low research initiatives in mental health, compared with other areas of medicine (which is disproportionate for the burden of these disorders). Professionals should take part in creating more knowledge in identifying risk factors, validate screening tools and develop effective interventions. Criticism has targeted the lack of research in low and

middle-income countries and scarcity of studies with real world implementation of programs[1,30]. Mental health funding should not forget this important topic.

c) advocacy – as highlighted before, mental health professionals are in a privileged position to disseminate knowledge to other health professionals, policy makers and the general population. There is a need for a clear communication of the preventable nature of these disorders, the importance of public health initiatives and specific measures to reduce stigma. This involves active participation at different levels, such as in community, municipal and national organizations.

d) technical advisors – for obvious reasons, experts are expected to take part in public health initiatives, in the development of programs and in integrating mental health promotion and prevention in national policies. It is reasonable to assume that every country has general prevention programs that should also address the evidence discussed here. Likewise, it is expected that different sectors communicate amongst themselves, articulating health, social security, education and economy, for example. Changes and benefits should be highlighted so that these programs can be further continued.

e) care providers – professionals need to take part as collaborators or even as leaders of intervention programs, articulating with other health professionals and with people from different sectors. Also, in their clinical practice, they come in contact with families and relatives of patients which themselves represent an at-risk group. In these cases, developing interventions at the family level and in relatives with subliminal symptoms can represent a primary prevention approach. An example are the well-studied interventions for children of parents with mental illness[24].

1.7 Mental Health Services and Primary Prevention

When we think of universal prevention, it is fairly simple to understand that this transcends the role of individual mental health services and that it needs a broader approach. Social determinants of mental health, for instance, need national policies to address issues like poverty, social inclusion or unemployment[14]. However, community services can act through their relations with city halls, local organizations and other players on the field to, firstly, create awareness for the importance of mental health prevention and the evidence supporting it (focus on cost-effectiveness), then advise on the creation of programs and their implementation[30]. This can also be highly valuable for research purposes.

The incorporation of an at-risk oriented clinical practice in mental health services is more controversial, but it has been recently gaining recognition[3]. Training professionals in this field is regarded as fundamental and should be supported by the services[1]. Additionally, services can be especially important in selective and indicated prevention, identifying early manifestations of disorders and developing targeted interventions[30]. Here, it seems reasonable to include primary care, both for detection and intervention, but also for periodic specialized

supervision, strengthening an important collaboration in mental health care.

Of importance is also the need to establish a comprehensive network of child and adolescent psychiatry services, which will be relevant to also address the children who have psychopathology in these high-risk populations. Furthermore, the transition from child and adolescent to adult psychiatric services is a vulnerable period for at-risk youths, so coordination is essential to address the often-large treatment gap, which has implications also in prevention[31].

2. International Organizations

In the first constitution of the WHO, in 1948, it is state that the "enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, or economic or social condition"[8]. This aim, according to the WHO Mental Health Department, should be addressed in a continuum of three levels: 1) prevention – universal, selective and indicated approaches; 2) treatment - secondary prevention and standard care; 3) rehabilitation – tertiary prevention and long-term care. As a continuum, the interactions between the two dimensions – prevention and treatment – are frequent and difficult to distinguish when we talk about prevention as a whole[6].

The first report on prevention of the WHO Mental Health Department was published in 1985, with the title "Prevention of Mental, Neurological and Psychosocial Disorders". In this document, there already existed substantial knowledge about the need for a comprehensive program on prevention and that this could lead to a reduction of the burden caused by mental disorders and therefore also have an economic impact. Several recommendations were made at different levels of intervention (primary, secondary and tertiary prevention). Education for parenthood, health education, control substance abuse in schools and day care for children were some of the interventions proposed by the work group[32].

In 2004, WHO in cooperation with the Prevention Research Centre of the Universities of Nijmegen and Maastricht, published the report "Prevention of mental disorders: effective interventions and policy options". Within this important paper, ten key messages were highlighted: 1 – prevention of mental disorders is a public health priority, attending to the current limitations in effectiveness of treatment modalities for decreasing mental disorders burden; 2 – mental disorders have multiple determinants, so prevention needs to be a multilevel effort, ideally developed in public health policies addressing the cluster of interrelated problems; 3 – effective prevention can reduce the risk of mental disorders and it can be cost-effective; 4 – implementation should be guided by available evidence, developed in a safe and culturally sensitive perspective; 5 – successful programs and policies should be made widely available, so accessibility is an important characteristic of interventions; 6 – knowledge on evidence for effectiveness needs further expansion, promoting research in the field; 7 – prevention needs to be sensitive to culture and to resources available across countries, given that there is a gap in preventive interventions

studied in low-middle income countries; 8 – population-based outcomes require human and financial investments, highlighting the need of funding that should come from different sectors; 9 – effective prevention requires intersectoral linkages, present in public health and health promotion policies at national level; 10 – protecting human rights is a major strategy to prevent mental disorders, supporting the importance of social determinants in mental health[6].

At the 65th World Health Assembly, in 2012, the resolution WHA65.4 underlined the burden of mental disorders and the need for a comprehensive and coordinated approach in all country members. It was suggested that countries developed or strengthened policies that addressed promotion of mental health, prevention of mental disorders, early identification and care for patients[33].

This was the last report specifically dedicated to prevention from WHO. In the WHO Mental Health Action Plan 2013-2020, it is noted that the responsibility for promotion and prevention of mental disorders extends across all sectors of the public administration. Again, it refers to social and economic determinants, like employment, education, poverty, child abuse and other. A target for country-members for 2020 was to have at least two functioning national, multi sectoral promotion and prevention programs in mental health[34]. In 2019, the action plan was extended until 2030 and the target was increased to at least three functioning prevention programs[35].

Also, in 2013, at the European Union, The Joint Action for Mental Health and Well-being was launched to build a European framework for action in mental health policy. This was coordinated by NOVA Medical School and covered promotion and prevention of mental disorders in different contexts, highlighting the need to address determinants of mental health by incorporating mental health into all policies, and the potential economic savings and cross-sectoral impact[36].

3. Focus on Portugal

In 1963, the law 2118 grounded the basis for mental health care in Portugal, at the time still based on asylum treatment but with increasing pressure for newer alternatives following the groundbreaking developments in psychopharmacology[37]. In this document, promotion of mental health is mentioned as a general rule, to ensure the "psychic balance of the human person", specifically mentioning prophylactic actions. This could be pedagogic or of "mental hygiene", collective or individual. Also, increasing child and adolescent psychiatric care was referred to as of primordial importance, in articulation with the adult psychiatric services[38].

The Portuguese mental health act (law 26/98) was published in 1998 (meanwhile revised and replaced by Law 35/2023, after this paper was submitted and accepted)[39]. This law answered an increasing international pressure to further organize mental health services in Portugal through the principles of community psychiatry[37]. In the second article of this law, it is stated that protection and promotion of mental health should be undertaken through primary, secondary and tertiary interventions, at the community level, aiming for a better integration in the social milieu[39]. Despite this initial article,

the rest of the law is essentially dedicated to compulsive treatment and its regulation[37].

In 2005, Portugal was one of the countries that signed the Helsinki Declaration, where it was recognized that "the promotion of mental health and the prevention treatment, care and rehabilitation of mental health problems are a priority"[40].

The previous Portuguese mental health plan (2007-2016), in accordance to European guidelines, recommended several strategies in prevention and promotion of mental disorders: 1) perinatal programs, that encompass prenatal counselling, parenthood education, child abuse prevention and family interventions; 2) education programs in schools about mental health, namely on drug abuse, suicide and eating disorders; 3) employment policies and promoting good mental health at workplace; 4) suicide prevention programs; 5) policies towards poverty, social exclusion, homeless people and fighting stigma; 6) clear communication about mental health and gathering support from different partners and sectors (schools, non-governmental organizations, media and others)[41].

In the evaluation report about this plan, it was clear that the prevention and promotion activities had failed to reach the level of development proposed. As possible causes, it was stated that other areas were prioritized in a first stage (later stages of the plan were hampered by an economic crisis) and that the coordination lacked autonomy. Still, the national plan on prevention of suicide 2013-2017 was developed, as well as several programs on fighting stigma through education and outsider art. Activities were also developed in coordination with other sectors like education, security forces and patients' associations. This field was again considered a priority and in need of a clear strategy for its development, spreading and implementation also in public health policies. It also highlighted the need for more research on social determinants of mental health specifically in Portugal, in order to address these vulnerable areas[42].

The Portuguese mental health plan was extended through 2017 to 2020, as several objectives were still to be completed. As an objective for 2020, the coordination defined a thirty percent increase in the number of mental health promotion and prevention programs[43]. In table IV some examples of prevention programs developed in Portugal are illustrated.

Table IV. Examples of primary prevention programs in Portugal.

Intervention	Description
"Semente" program, Hospital Prof. Doutor Fernando Fonseca	It aims to promote mental health in children of parents with mental illness and prevent the later development of mental disorders, by early identification of these children and improving parental competencies in parents with psychiatric disorders. It also provides treatment of psychiatric symptoms in these children, by the child and adolescent psychiatry service.
"+Contigo", Centro Hospitalar Universitário de Coimbra[44]	Intervention aimed for promotion of mental health and prevention of suicidal behavior, implemented in teenagers, in schools, in articulation with primary care.

Finally, in 2019, the national council of health released a comprehensive report on mental health care in Portugal. Promotion and prevention in mental health had a complete chapter, addressing good mental health, the need for primary prevention and early diagnosis, parenthood education, bullying and other violence prevention, workplace mental health and quality of life in old age, again underlining the need to further develop this area in the country[45].

4. Future Directions

For the time being, it is clear that available treatments in mental health have shown little effect on reducing the burden and improving quality of life of patients. Despite a growing interest in recent times, with the identification of risk factors, critical periods and illness trajectories, with evidence-based interventions, prevention has yet to find its place in clinical practice and public health policies.

Research in prevention and promotion of good mental health represents less than five percent of mental health research funding, uncovering a severe lack of investment in this field. Despite a substantial increase in recent years, investigations are still needed to further validate risk factors, protective factors, discovering causal links and ways to address them in evidence-based interventions. Of interest, programs that combine strategies that tackle generic risk factors which are shared by several mental disorders, as well as enhancing protective factors, seem more noteworthy, using existing facilities and resources. For this, mental health needs to captivate the involvement of health authorities and also the development of socially sensible policies by governmental agencies. This approach needs multilayer actions, like in housing, social welfare, employment, human rights, education or criminal justice, all working coordinately, in an efficient use of resources. Local organizations are also important key figures at a community level, supporting sustainable strategies and improving acceptability.

Advocacy is a key instrument in pursuing this objective, enhancing awareness about prevention and disseminating information on the cost-effectiveness of the interventions, even for the general public. Training of mental health workers in this area also needs to be promoted, interrupting the enduring vision that prevention is only addressed at the primary care or governmental circles. Services and organizations should work collectively in order to share knowledge, research initiatives and to develop multicenter interventions. Long-term impact needs to be measured, enabling further validation of actions and detecting effect predictors that improve effectiveness. Given the high comorbidity of physical disorders in people with mental disorders, it also seems important to undergo research that may reveal a benefit in this domain. Cultural adaptations of interventions also need to be undertaken, engaging communities and improving acceptability. Effective programs should also create manuals, guidelines or other documents that facilitate dissemination of knowledge.

In Portugal, the national mental health program has placed prevention in its main objectives, further describing relevant areas and interventions that need to be attended to. However, it has been difficult to implement

these goals in the field. Mental health services struggle to have autonomy and support for developing specific programs. This eventually happens with external financing or in association with academic institutions. The national coordination also lacks autonomy to directly implement strategies and coordinate efforts on research and clinical practice. Also, barriers exist in mental health professionals, in a country where stigma still plays a significant role in further advancing our mental health reform.

DISCUSSION AND CONCLUSIONS

Primary preventive strategies have gathered increasing evidence about their effect, security, applicability and economic benefits. Despite this, there is still a discrepancy between investigation, policies and clinical practice. Universal prevention programs need to be discussed essentially at governmental level, selective and indicated at the community, primary care and mental health services, improving recognition and early interventions. A significant reduction in the costs and burden of mental disorders can therefore be put in place, in a way other therapeutic tools cannot achieve.

Mental health workers and services need to take part in developing and advocating for the implementation of these interventions, in coordination with existing programs and according to disease trajectories and critical periods framework. Prioritization of these actions could begin with at-risk populations like children of parents with mental illness or children showing non-specific symptoms that could easily be addressed by adult and child and adolescence teams, ideally in a coordinated manner. It is also essential to gather public support for achieving these goals, disseminating the potential societal benefits supported by the available evidence. Research in the early trajectories of mental illness is still needed, as a way to understand specific risk and protective factors, predictive tools and cost-effective interventions.

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