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Communalistic use of psychoactive plants as a bridge between traditional healing practices and Western medicine: A new path for the Global Mental Health movement

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Title: Communalistic use of psychoactive plants as a bridge between traditional healing practices and Western medicine: A new path for the Global Mental Health movement.

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Abstract

The Global Mental Health (GMH) movement aims to provide urgently needed treatment to those with mental illness, especially in low- and middle-income countries. Due to the complexity of providing mental health services to people from various cultures, there is much debate among GMH advocates regarding the best way to proceed. While biomedical interventions offer some degree of help, complementary approaches should focus on the social/community aspects of the situation. Many cultures conduct traditional rituals involving the communal use of psychoactive plants. We propose that these practices should be respected, protected, and promoted as another valuable tool with regards to mental health care at the community level. The traditional use of psychoactive plants promotes community engagement and participation, and they are relatively affordable. Furthermore, the worldviews and meaning-making systems of local population are respected. The medical systems surrounding the use of psychoactive plants can be explained in biomedical terms, as many recently published clinical trials have demonstrated their therapeutic potential. Psychoactive plants and associated rituals offer potential benefits as a complementary aspect of mental health services. They should be considered as such by international practitioners and advocates of the GMH movement.

Keywords: Global Mental Health, mental health, traditional medicine, psychoactive drugs, community, ayahuasca.

"We had a lot of trouble with Western mental health workers who came here immediately after the genocide (...) they came and their practice did not involve being outside in the sun where you begin to feel better, there was no music or drumming to get your blood flowing again, there was no sense that everyone had taken the day off so that the entire community could come together to try to lift you up and bring you back to joy, there was no acknowledgement of the depression as something invasive and external that could actually be cast out again. Instead they would take people one at a time into these dingy little rooms and have them sit around for an hour or so and talk about bad things that had happened to them. We had to ask them to leave."

Rwanda inhabitant (cited in Kaklauskas & Nettles, 2019)

Introduction

The quotation cited by Kaklauskas & Nettles (2019) has been used in various forums as expressive of culturally inappropriate mental health interventions in countries of the Global South. While several other authors have raised this concern before (and especially in the context of the Global Mental Health or GMH movement), the aim of this manuscript is to further extend this point of view to the traditional use of psychoactive plants. Genuine medical systems have been developed around this practice, which is generally carried out in ritual or ceremonial settings, but they have been often vilified as a result of social stigma or Western drug policies, among other reasons.

~~Global Mental Health (~~GMH~~)~~ has been defined as a movement, discipline or coalition that engages in collective actions in order to provide evidence- and human righst-based treatments for people living with mental health disorders. Such disorders are a major cause of morbimortality (Bloom et al., 2011; Collins, Patel, Joestl, March, & Insel, 2011; Insel, 2009). It is therefore reasonable to devote considerable effort to ensuring that people with mental illness receive appropriate treatment. Indeed, since GMH was launched in 2008, 225 institutions and over 15,000 individuals have joined the movement (GMH, 2019).

The GMH movement focuses its actions especially on low- and middle-income countries (LMICs) where the number of people who do not receive the care that they need is particularly high (Demyttenaere et al., 2004; Wang et al., 2007). ~~There is substantial evidence of this, such as the insufficient public health resources (around 1% in some Asian and African countries; Copeland, Thornicroft, Bird, Bowis, & Slade, 2014)~~

allocated specifically for mental health care and the lack of healthcare practitioners available to deliver proper mental health services (e.g. in India there are 4000 psychiatrists for a population of more than one billion, while in the United States there are 50,000 psychiatrists for a population of 300 million; Bruckner et al., 2011; Patel, 2012; Saxena, Thornicroft, Knapp, & Whiteford, 2007). This situation was named "the treatment gap" by Patel et al. (2010). With the aim of reducing this gap, the World Health Organization (WHO) developed the *Mental Health Gap-Action Programme* (mhGAP-AP) in 2008 (WHO, 2008) and the *Mental Health Gap-Intervention Guide* (mhGAP-IG) in 2010 (WHO, 2010a). The aim of these initiatives was to develop guidelines for non-specialist health workers to address mental disorders when providing routine health care services.

The core of the WHO' strategy involves scaling up services and task-shifting procedures. Those services would ideally be selected by identifying evidence-based practices that could be made more widely available in LMICs (Chisholm et al., 2007). However, due to the abovementioned scarcity of health practitioners, task-shifting (which consists of delegating basic care tasks to local non-specialist health workers) is also promoted for the delivery of mental health treatments. Task-shifting has shown satisfactory results in several studies (Bolton et al., 2007; Dias et al., 2008; Rahman, Malik, Sikander, Roberts, & Creed, 2008).

Despite the enduring need for the GMH movement, it has been attacked by authors from a variety of disciplines, ranging from medical anthropology (Campbell & Burgess, 2012; Han, 2013; Read, Adiibokah, & Nyame, 2009; Read, 2012) to psychiatry (Fernando, 2011; Summerfield, 2008,2012,2013). The main critique warns of the biomedical orientation of the GMH movement and its subsequent medicalization (Clark, 2014). The biomedical model rarely considers social determinants of health, which are crucial to consider in light of the socioeconomic situations in the majority of LMICs (WHO-CGF, 2014). Additionally, the biomedical model risks disqualifying and ignoring traditional local practices that involve the use of psychoactive plants because there is no available evidence regarding their efficacy or safety in terms of Western research standards. Other controversial claims regarding the GMH movement note the lack of cross-cultural validity of both diagnostic criteria and the concept of mental health, as they were developed in wealthy Western countries (Summerfield, 2012, Hinton & Good, 2015), and thus being another way of colonization (Mills 2014); as well as the lack of evidence of the efficacy of "evidence-based" practices in LMICs, since most relevant clinical trials were conducted in high-income countries (Baingana, al'Absi, Becker, & Pringle, 2015; Kieling et al., 2011; Patel & Kim, 2007; Razzouk et al., 2010). In general, these authors demand that a culturally sensitive psychiatry be used in the context of the GMH movement.

Considering all of the criticisms, the lack of alternative proposals is surprising. We consider the GMH movement to present a great challenge but also as a major opportunity to reduce the high human and material costs of psychological distress on a global scale. Some of the limited number of proposals for improving GMH strategies suggest that people affected by mental illness and psychological distress engage in local, traditional healing practices (depending on the setting, these includes religious rituals, plant medicine, or the induction of trance-like states, among others) (Snodgrass, Most, & Upadhyay, 2017; Sood, 2016). This argument is reasonable in light of the efficacy of

"traditional medicines" (Snodgrass, Most, & Upadhyay, 2017; Deng & Xu, 2017; Sax, 2014; Tang, Tang, & Leonard, 2017; Zheng et al., 2016) and the problems associated with excessive psychiatric interventions, such as the adverse effects associated with psychiatric drugs (Cooper, 2015; Gøtzsche, 2015; Mulder & Frampton, 2014; Murthy, 2015). However, the WHO's Mental Health Action Plan 2013-2020 mentions the usefulness of traditional medical systems only marginally, qualifying them as "informal": "Greater collaboration with 'informal' mental health care providers, including families, as well as religious leaders, faith healers, traditional healers, school teachers, police officers and local nongovernmental organizations, is also needed" (WHO, 2013a). Similarly, the Lancet Commission on Global Mental Health and Sustainable Development's report dedicates a single sentence to collaboration with traditional healing systems, stating that "global mental health practitioners have shown that integrating understanding of local explanatory models of illness experiences is possible while respecting the complementary role of Western biomedical and local traditional approaches to treatment."

The aim of this manuscript is to provide a theoretical background for exploring the use of traditional medicine as a possible healthcare option. Specifically, traditional practices involving the use of psychoactive plants will be discussed, in accordance with our previously published works (Bouso & Sánchez, 2020) and our fieldwork experience. Given the renewed interest within the global North in psychedelic-assisted psychotherapy and the remarkable advances in the field, this discussion is timely and necessary. ~~Additionally, at the end of the manuscript, another proposal from a broader perspective will be suggested. This consists in that we should approach various traditional ways of dealing with distress with the attitude of a learner, rather than trying to export our mental health services to that places.~~

~~Here we further this claim by suggesting that the traditional use of psychoactive plants can also play a role in addressing mental health issues. Additionally, we later propose that, instead of exporting our mental health services to other countries, we should also think about what can we learn from various traditional ways of viewing and dealing with distress, considering their focus on community and complex treatments. This knowledge could be applied especially in the case of recent psychedelic therapies that have been developed.~~

The role of community and traditional medicine in mental health

Community engagement plays a crucial role in mental health, and the traditional use of psychoactive plants can help to enhance it. Increased social inclusion is recognized as a key objective among individuals with psychological distress in LMICs (Baumgartner & Burns, 2014; Wang et al., 2007). Moreover, community interventions should be given a more central role in harnessing resources and promoting psychological well-being. It has been observed that focusing on actions at the community level, and thus enhancing social cohesion, can have a more positive psychological impact than individualistic approaches

(Góngora, 2010; Scholte et al., 2011; Verduin, Smid, Wind, & Scholte, 2014). Similarly, some authors have emphasized this approach, noting that certain social characteristics (e.g. a more fluid, less categorical approach to culture, medicine, and politics) of the countries belonging to the Global South might make the approach more effective when addressing mental health issues globally (di Nicola, 2020). In this sense, White, Orr, Read, & Jain (2017), discussing community-based interventions within the GMH, cite the "Recovery Approach" (Anthony, 1993) as an example of how this movement can benefit from approaches focused on promoting connectedness, hope, identity, meaning, and empowerment, rather than simply trying to reduce the severity of psychiatric symptoms. Community-based rehabilitation (WHO, 2010b) and community based system dynamics (Hovmand, 2014) are among the other methods mentioned the in recent literature concerning community-based interventions in the context of GMH.

~~Clark (2014) noted that GMH advocates hold a highly individualistic view, whereby they aim to scale-up medically-oriented mental health services only. In this context, *community* is regarded exclusively as a method of service delivery, an easier way to get to the individual, and *community participation* simply charges patients and health workers with aiding in this process (Jansen et al., 2015; Kakuma et al., 2011). Scaling up medically-oriented services only risks inadequately addressing social determinants of health like the economic, familial, religious, and community dimensions that are frequently the underlying causes of distress (Petersen, Baillie, & Bhana, 2012). Similarly, White & Sashidharan (2014) suggested that the key limitation of the mhGAP is the lack of emphasis on the role that social and cultural factors potentially play in mental health problems.~~

When we think about practices that involve the participation of a whole community, and that are therefore commonly viewed as strengthening social bonds, rituals and religious feasts are prime examples. In fact, Durkheim described "collective effervescence" as resulting from situations whereby people communalistically gather to engage in spiritual or religious celebrations. Turner's concept of "communitas" might also be mentioned. Participants in these gatherings tend to feel connected, accepted, and, thus, potentially less stressed and anxious (Durkheim, 2000; Turner, 1982). In addition, it is noteworthy that religious beliefs and practices offer psychological and social benefits (Heim & Schaal, 2014; Vallverdú, 2010; Webb, Charbonneau, McCann, & Gayle, 2011). Indeed, medicine and religion were not initially separated, and they still converge in the "shamanic complex," which has been studied as a healing mechanism (Apud & Romaní, 2017; Winkelman, 2010). According to some authors, the shaman and other traditional healers who use psychoactive plants (ayahuasca, Iboga, and/or psilocybe mushrooms) in traditional rituals must be framed within pluralistic medical systems (Apud & Romaní, 2017; Singer & Baer, 2012). This paradigm not only respects local ways of expressing and dealing with distress, but also suggests the need for as many health care alternatives as possible (Apud & Romaní, 2017). In that regard, the WHO asked in its Traditional Medicine Strategy 2014-2023 for dynamic politics that reinforce the role of traditional medicines in the maintenance and promotion of health (WHO, 2013). This WHO strategy also emphasizes the need to integrate traditional medicine within public health systems. ~~Moreover~~In that regard, the WHO asked in its *Traditional Medicine Strategy 2014-2023*

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Examples of the traditional use of psychoactive plants as a healthcare strategy

Psychoactive plants have been used for centuries in many cultures, mainly in communal ceremonies (Badham, 1984; Cawte, 1985; de Rios, 1968; Luna, 1986; Shanon, 2002; Sobiecki, 2012; Talin & Sanabria, 2017). The traditional use of ayahuasca, *Tabernanthe iboga*, and peyote (*Lophophora williamsii*) exemplifies how psychoactive plants are used and their involvement in medical systems. ~~Ayahuasca was originally associated with the native Amazonian population, where 72 ethnic groups used ayahuasca in an integrated system of community care (Luna, 1986). Then, at the beginning of the 20th century, several Brazilian churches were founded in urban areas, with *Santo Daime* being the most important. These were syncretic cults, mixing Umbandism, Kardecian spiritism, Catholicism, and shamanism in various combinations, depending on the church (Apud & Romaní, 2017). These churches were initiated by poor black and mestizo families in the state of Acre, in areas where healthcare was nonexistent. Ayahuasca was used in this context as a tool for both diagnosis and healing, and a genuine medical system was created based on communal use of the brew (Talin & Sanabria, 2017). In particular, the intention of Santo Daime ceremonies is to facilitate communal mystical experiences. The shamanic ceremonies generally revolve around the figure of a shaman and his/her dramatic performance. In contrast, Santo Daime ceremonies are characterized by community gatherings where bonds are strengthened (Metzner, 2002).~~

A very interesting contemporary example of ayahuasca being used to prevent and/or heal community mental health issues is the case of the members of the UMIYAC (Unión de Médicos Indígenas Yageceros de Colombia), a coalition of *taitas yageceros* or shamans of the Putumayo region in Colombia. These *taitas* travel to various regions, conducting what they have termed "*brigadas de salud*" (health brigades). During their travels, they visit villages affected by the armed conflict that the country faced and organize communal ceremonies in which ayahuasca is used. This allows them to prevent and to heal trauma through a communitarian intervention involving local traditional medicine (Caicedo, 2010). Recent findings would support the use of ayahuasca in this context, since it has been observed that it possesses notable antidepressant (Palhano-Fontes et al., 2019) and anxiolytic properties (dos Santos et al., 2007). Furthermore, it has been observed that naïve users experience sustained improvements in ~~, and sustained on time improvements in~~ mental health and quality of life (Jiménez-Garrido et al., 2020). ~~Additionally, preliminary results suggest that it could be also effective in cases of grief (González et al., 2020).~~

In the case of iboga, this psychoactive plant is used by practitioners of Bwiti, the spiritual tradition of the Bantu population of Gabon, in Central Africa (Pope, 1969). Iboga is used in small amounts during spiritual/musical soirees, which are performed in each village almost every weekend. These soirees involve singing, dancing, playing percussion

instruments, externalizing emotions, sharing insights, and creating a very strong concept of brotherhood. The iboga is consumed in large quantities on particular occasions, such as by a neophyte during an initiatory rite. Different effects have been associated with Iboga/ibogaine. In small doses it exerts psychostimulant effects, and for that reason it was commercialized in France until 1970 as a neuromuscular stimulant. It was sold in tablets containing 8 mg of ibogaine and was prescribed mainly to individuals presenting fatigue or depression (Goutarel, Gollnhoffer, & Sillans, 1993). Recent preclinical studies have found antidepressant effects after a single administration of ibogaine in rats (Rodriguez et al., 2020), as well as potential antiparkinsonian effects (Marton et al., 2019).

~~This rite-of-passage involves complex and long-lasting rituals, including baths, prayers, tribal music, and energetic dancing. This ritual, which is of a strong religious orientation, based on the Cult of Ancestors, can take place during adolescence. Young tribal men become adults by spending several days in the jungle overcoming physical fears, or the ritual can be requested for personal reasons, such as health issues or to gain support when dealing with trauma. The iboga experience reportedly consists of visions, often concerning traumatic or emotional experiences, personal relationships, and important decisions that the participant has made (Samorini, 1997).~~

Iboga and its active compound, ibogaine, have been used for decades in Western countries to treat drug dependence, mainly in terms of opioids (dos Santos et al., 2017). Although their use in Western culture differs from traditional contexts (as they are used as an individual medical treatment in the West instead of as part of a communitarian practice), the benefits for subjects may be similar in certain ways. However, the benefits may be greater in traditional contexts, since it is not only the individual who receives a direct benefit from the substance, but the whole community benefits, as the use of iboga cannot be separated from the whole ritual, which is rich in symbolic elements.

Another example of a psychoactive plant that is used in a communal manner as a healthcare tool is peyote. Currently, the indigenous people of Mexico belonging to *huicholes*, *tarahumaras*, *coras,* and *tepehuanes* can legally use peyote in traditional rituals. In the United States, members of the Native American Church can also cultivate and use peyote in traditional ceremonies that take place on reservations. ~~Indigenous people who use peyote believe that God placed the cactus on earth for their use. They consider the cactus to be able to teach them the proper way of life, noting that it can function as a helper in times of need and as a medicine in times of illness (Wiedman, 1985).~~ Generally, peyote meetings can be organized whenever an individual has a social, spiritual, or health need. The peyote is used communally during an all-night ceremony (Wiedman, 1990), and some neuropsychiatric research has shown that this practice has not involve relevant harms (Bergman, 2006; Halpern et al., 2005).

The traditional use of peyote offers a perfect example of how different medical systems can coexist and serve a common purpose. Ethnographic studies have shown how people have attended peyote meetings to treat blindness, hernia, high blood pressure, and congestive heart failure. However, in all of these cases, the individuals were also treated by physicians or by the Indian Health Service. The different medical systems operate independently—there is no exclusive provider of care. At the same time, the use of peyote is considered ineffective in cases of cancer or diabetes, which are considered to be better

treated by the *white man* (Wiedman, 1990). Additionally, it has been observed that complex interventions conducted by American Indians that include peyote ceremonies could be effective in the treatment of alcoholism (Albaugh & Anderson, 2015; Hill, 2013).

~~One important aspect to note when considering the therapeutic potential of peyote ceremonies is their cultural meaning. These ceremonies help American Indians to maintain a sense of cultural heritage and identity, providing a body of moral values, traditions, and worldviews (Feeney, 2016). This cultural identification can be translated to an enhanced meaning and to the subsequent community reconnection, obtaining the benefits associated with it.~~

~~Another situation in which the two medical systems can complement each other is when a physician receives diagnostics. Peyote meetings are highly rich in symbolic elements (Feeney, 2016), so in the ceremony the words of the physician are commonly re-interpreted in symbolic terms, becoming more understandable for the patient. In this way, the patient would be better able to follow the medical requests regarding medication use or dietary restrictions.~~

In addition to the social benefits that these communal gatherings offer, where subjects not only participate in an important cultural ritual but also gain renewed social support, feeling a sense of identity and social solidarity, there is also more efficient resource distribution. It is common for all participants to have supper together the evening before the ceremony, and they also have dinner together the next afternoon. The remaining food is taken by elderly people, especially males who live alone, making this one of the few times that they eat home-cooked meals (Wiedman, 1990). This arguably important nutritional supplement can also improve individual and collective health. So, peyote ceremonies can be conceived of as very complex and holistic interventions that include moral values, cultural elements, pharmacological effects, and nutritional improvements, among other aspects. These interventions serve not only as treatments, but they also have a protective effect on mental health.

Bridging the traditional use of psychoactive plants with biomedicine

Considering the high~~ly~~ prevalence of and preference for traditional healers in developing countries (Armijos, Cota, & González, 2014), the shortage of biomedical human resources, and patients' difficulties with adhering to a prescription for the medication (Teferra et al., 2011), there is an obvious need for mental health care programs to align traditional and spiritual healers with biomedical care.

In Western culture, the use of psychoactive plants and subsequent induction of altered states of consciousness is roughly understood as a positive or adaptive practice. However, such practices have been carried out over centuries or millennia by various cultures, serving as tools of cohesion, medicine, and sacraments, among other uses (Furst, 1976; Harner, 1976). Additionally, the use of these plants offers a link between traditional healing practices and the biomedical model, since the latter can provide valuable tools in

order to understand the potential efficacy or safety of these practices, while the former provides clues regarding how to address complex health problems. ~~On the one hand, they~~Rituals or ceremonies involving psychoactive plants promote community engagement and participation, they are culturally and financially accessible, the worldview and meaning-making systems of local populations are respected, and traditional healers who provide the plants are generally experts in managing social stressors (De Jong, 2001; Frank & Frank, 1991). There is a vast bibliography about the "community engagement" paradigm, which Community Psychology and Community Psychiatry both specifically focus on. These disciplines are partially the legacy of the anti-psychiatry movement and significantly influenced the mental health reforms at the UN-level that were based on human rights systems, whether involving the use of psychoactive plants or not, are community-based approaches, since community is central in traditional cultures (Waldram, 2000). The above-mentioned cases of UMIYAC regarding ayahuasca and the communities using peyote and iboga are good examples, since they seem to work properly within their contexts. However, the shift to a community approach is ultimately a political rather than a scientific move, since it is only by developing policies that strengthen community that we can achieve community mental health interventions. The expanding use of ayahuasca and other ceremonies involving psychoactive plants that take place in group settings offer an excellent example of how people seek practices that strengthen community bonds, which is logical considering that we are social animals (Wilson & Hölldobler, 2005). ~~On the other hand,~~Given the complexity of the examples described, it would be risky to delineate general and transposable recommendations for different contexts in an effort to bridge these two different knowledge systems. The first steps that we propose should focus on scaling up the traditional use of psychoactive plants in the communities with a history of use (e.g. in different Mexican, Andean, and Amazonian regions, among Native Indians in the US, etc.), in order to potentiate their communal health benefits. This would mean working in various areas and from various disciplines, confronting inappropriate drug policies, respecting human rights, and protecting the territory and the environment. Bridging the traditional use of psychoactive plants and Western medicine should be a two-way, decolonizing process. While the biomedical model validates the health benefits of this practice (using different research methods that range from neurobiological inquiries to epidemiological or public health studies), researchers would be gaining traditional knowledge in order to improve current Western mental health treatments. One clear example in this regard is the proposed combination of traditional knowledge regarding psychoactive plants, the psychedelic research field, and the polypharmacology paradigm, a ground-breaking paradigm in pharmacology (Ona & Bouso, 2019; Ona, dos Santos, Hallak, & Bouso, 2020). Polypharmacology refers to the use of drugs that bind to multiple drug targets, as opposed to the classical pharmacology paradigm of "one gene, one drug, one disease," which involves designing highly selective ligands (Jalencas & Mestres, 2012). From this polypharmacology perspective, traditional medicines based on herbal therapy are gaining legitimacy, since the methods used (involving omics or networks biology) are able to mimic the complex interactions of multiple compounds commonly found in natural products (Yuan et al., 2017). This same idea can be applied in the case of traditional medicines that involve psychoactive plants or other natural products, as has been recently proposed (Ona et al., 2020).

Apart from this recent paradigm, the mental health benefits of psychoactive plants ~~can be explained in biomedical terms, due to increased research into the therapeutic potential of many of these plants~~ have been studied for over 20 years. ~~(Sessa, 2012).~~ Their clinical

use has been extensively researched (dos Santos, Bouso, Alcázar-Córcoles, & Hallak, 2018), showing therapeutic potential for conditions like depression (Carhart-Harris et al., 2017; Palhano-Fontes et al., 2018), anxiety (Griffiths et al., 2016; Ross et al., 2016), and addictions (Bogenschutz et al., 2015; Johnson, García-Romeu, Cosimano, & Griffiths, 2014). Furthermore, our knowledge of the underlying neurobiological mechanisms at work is certainly growing (Kyzar, Nichols, Gainetdinov, Nichols, & Kalueff, 2017).

Some specific mechanisms through which psychoactive plants exert therapeutic effects have been proposed, although these mechanisms have yet to be completely described. First, the anthropological literature has largely discussed placebo and other related effects potentially involved in ritualistic settings. In that regard, Apud (2020) pointed out how these contexts decrease the top-down executive control of the brain, depleting cognitive resources through causal opaqueness, stereotyping, formality, redundancy, and/or the presence of a charismatic authority. This process makes the ritual participant more suggestible, and therefore more permeable to collective memories, narratives, and ideas. In relation to that, Dobkin de Rios also suggested that "doctrinal submission" could have been involved in health improvements observed after participating in rituals (de Rios, 1976).

In pharmacological terms, It was discovered recently that *N*,*N*-dimethyltryptamine (DMT), a compound found in the ayahuasca beverage, promotes neural plasticity via TrkB, 5-HT_{2A} receptors, and the mammalian target of rapamycin (mTOR; Ly et al., 2018). The same study showed that noribogaine, a metabolite of ibogaine, the main psychoactive substance of *Tabernanthe iboga*, promotes neuritogenesis. This effect is probably due to an increase in the brain-derived neurotrophic factor (He et al., 2005), which is associated with both neuritogenesis and spinogenesis (Cohen-Cory, Kidane, Shirkey, & Marshak, 2010). These findings are highly relevant, since atrophy in the neurons of the prefrontal cortex (PFC) plays a key role in mental and neurological disorders (Autry & Monteggia, 2012; Duman & Aghajanian, 2012; Duman, Aghajanian, Sanacora, & Krystal, 2016; Qiao et al., 2016), and it can be counteracted by compounds capable of increasing neural plasticity in the PFC (Castrén & Antila, 2017; Cramer et al., 2011; Kolb & Muhammad, 2014).

Another potential mechanism of action concerns the effects of psychoactive plants on brain connectivity. A decrease in connectivity within the default mode network (DMN) was observed following psilocybin and ayahuasca administration (Carhart-Harris et al., 2012a,2012b; Palhano-Fontes et al., 2015). This is relevant because increased activity and connectivity within this network has been associated with depression, attention deficit-hyperactivity disorder (ADHD), schizophrenia, and anxiety (Drevets, Price, & Furey, 2008; Gudayol-Ferré, Peró-Cebollero, González-Garrido, & Guàrdia-Olmos, 2015; Hamilton, Farmer, Fogelman, & Gotlib, 2015). While these effects are found in the DMN, regarding global brain connectivity, psilocybin was found to reduce segregation between different regions, establishing new topological, long-range functional connections (Petri et al., 2014; Roseman, Leech, Feilding, Nutt, & Carhart-Harris, 2014). It has been suggested that the disintegration of DMN and increased global connectivity disrupts the connections responsible for disorders, replacing them with stronger, more functional connections. This ensures the reconnection of networks in a "healthy" manner (Kyzar et al., 2017). Other potential mechanisms include neuroendocrine (Schindler, Wallace,

Sloshower, & D'Souza, 2018), anti-inflammatory (Flanagan & Nichols, 2018), and glutamatergic actions (Vollenweider & Kometer, 2010). Recently, it has been suggested that the mechanisms through which psychedelic drugs exert their therapeutic effects should be studied in light of the polypharmacology paradigm, since they display a complex, multi-target effect on several sites of the central nervous system (Ona et al., 2020). Other scientifically-validated psychological mechanisms are related to changes in personality (Bouso, dos Santos, Alcázar-Córcoles, & Hallak, 2018), psychological process measures (Franquesa et al., 2018; Soler et al., 2018), meaning-enhancing properties (Hartogsohn, 2018), and the effect of the psychedelic/spiritual experience itself (García-Romeu, Griffiths, & Johnson, 2014; Majic, Schmidt, & Gallinat, 2015).

Furthermore, population studies have shown that the use of psychedelic drugs is not a risk factor for the development of mental health issues (Krebs & Johansen, 2013). It has also been shown that their use is not linked with heightened distress or suicidal behavior (Hendriks et al., 2015; Johansen & Krebs, 2015). Observational studies comparing ritual practitioners with non-practitioners in traditional settings have shown improvements in mental health status and neuropsychological functions both in the case of peyote (Halpern et al., 2008) and ayahuasca (Barbosa et al., 2012,2016; Bouso et al., 2012,2015).

Almost all of this evidence, however, has been collected through research in non-traditional settings, far from the original context of use. Among the lessons that have been learned in the field of ethnobotany, the natural product of interest's attachment to its traditional use is often mentioned. This is because such long-standing use might have involved the gradual development of the most appropriate ways of harvesting, drying, preparing, and administering the product. Thus, the ritual and ceremonies in which these psychoactive plants are commonly ingested play a vital role in terms of enhancing their benefits and reducing their risks (Apud, 2020; Talin & Sanabria, 2017). Notably, some studies regarding traditional Amazonian medicine that have been recently published report their effectiveness when it comes to the treatment of substance-use disorders (Berlowitz et al., 2019; Berlowitz et al., 2020) and grief (González et al., 2020).

~~Evidence beyond biomedicine~~

~~One thing that both the WHO and the main authors in the field of GMH agree on is that we have to scale-up "evidence-based" interventions. However, at some point we have to ask ourselves what precisely we mean by "evidence", especially when considering recent controversies about it (Anjum, Copeland, & Rocca, 2018). The term "evidence-based" is commonly interpreted as referring to evidence gained via a biomedical approach, using modern and robust methodologies to produce research located as high as possible on the famous "hierarchy of evidence." At the top of this hierarchy, we find meta-analyses and randomized controlled trials (RCTs), while expert opinions and observational studies are at the bottom. It is assumed that RCTs are more empirically sound and offer enhanced certainty as compared to observational studies. However, the belief that using those study designs at the top of the hierarchy will be more likely to produce actual "facts" is false. Authors have shown how "malleable" meta-analyses and randomized controlled trials are (Stegenga, 2018). The results they provide are highly inconsistent for many reasons, with~~

~~the most critical reason being the corporate investment in medical research. Other reasons concern intrinsic methodological limitations (Greenhalgh et al., 2015; Nyirongo, Mukaka, & Kalilani-Phiri, 2008; Möller & Broich, 2010).~~

~~Satirical but highly educational studies have been published noting that observational studies are a good research option in certain contexts (Smith & Pell, 2003; Yeh et al., 2018). Observational research has been conducted with communities that have used ayahuasca or other psychoactive plants (Bouso et al., 2012,2015; dos Santos et al., 2007; Ona et al., 2019). So for some questions, maybe it would not be a matter of what *kind of evidence* we have, but the *kind of knowledge* we need. In the case of psychoactive plants, we see a growing body of "biomedical evidence" or observational studies, as we noted above. But when considering a traditional, communalistic use of those plants, this knowledge, though highly useful and necessary in other cases, could not fit our needs. In the case of the traditional use of peyote, some authors have stated that the therapeutic effects encountered in ceremonies are not explainable in pharmacological terms, and that those effects could not be replicated in a hospital setting (Loizaga-Velder & Loizaga Pazzi, 2012). The structure of the ceremony, the shaman's interventions, social dynamics, symbols, and the ritual metaphors are inseparable elements of the process.~~

~~So selecting only those evidence-based interventions is a good way to proceed, but it would not be appropriate to select interventions for which only biomedical evidence is available. Especially in the case of the traditional use of psychoactive plants, biomedicine should be combined with other kinds of knowledge, including spiritual, embodied, and practice-based knowledge (Cooper, 2015). Nurturing, vitality, relationships, phenomenology, care, intimacy, and many other factors should be included in any body of useful evidence regarding the communalistic use of psychoactive plants~~.

Final thoughts

Every society has its methods of healing, which should be respected. ~~Sadly, the marginalization of traditional medicine in favor of approaches supported by the modern concept of evidence-based medicine (Masic, Miokovic, & Muhamedagic, 2008) may be erasing other valid forms of healing (Mills, 2014; White & Sashidharan, 2014).~~ The GMH movement should be seen as offering an opportunity to build a ~~n integrated~~ global network for care and support, integrating ~~using both~~ traditional approaches within a broader range of disciplines that extends beyond biomedicine. ~~and biomedical approaches.~~ Fortunately, in recent years the GMH field has incorporated a wide variety of evidence, resulting from research that used quasi-experimental, participatory, and anthropological designs (Jain & Orr, 2016; Kirmayer & Pedersen, 2014; Kohrt et al., 2016). This comprehensive perspective should embrace the traditional use of psychoactive plants as well, as they are recognized for their relevance in the context of complex medical systems, as has been shown above.

The use of psychoactive plants is widespread globally, but it is often restricted to specific communities or even prohibited by governments, particularly when the psychoactive natural products are reduced by authorities to their active compounds, which are

scheduled under international and national legislations (ayahuasca and its psychoactive compound, DMT, are an example). Moreover, we see an astonishing paradox when peyote is classified as a Schedule I drug (meaning that it has no medical use and a high potential for abuse) but, at the same time, peyote is recognized by numerous indigenous groups as a sacred plant and a marvelous medicine. So, the use of psychoactive plants is located in a wide variety of legal and cultural contexts that must be accurately analyzed.

Due to the complexity of every context where GMH advocates want to intervene, we suggest using an active dialogue between community members, researchers, and service providers, given equal status, in order to identify and coordinate the best way to integrate all resources. The methodology of *Knowledge Dialogues* can be useful, since it is actually used for very similar purposes: the involvement of a whole community in dealing with health issues, the restoring of traditional knowledge, and the finding of "meeting points" between traditional medicine and modern Western medicine (Hernández-Rincón, Lamus-Lemus, Carratalá-Munuera, & Orozco-Beltrán, 2017). We should not conceive of traditional communities in LMICs as passive, waiting for external experts to solve their problems, but as active agents with well-established local worldviews and their own medical systems, framed by cultural beliefs. In this sense, other methodologies such as participatory action (Bergold & Thomas, 2012; Stomski & Morrison, 2017) are highly relevant. This methodology offers the opportunity to establish a dialogue with the objective of revealing common and relevant struggles, for which solutions can then be co-developed.

The traditional use of psychoactive plants must be conceived of as a very complex phenomenon that, beyond strengthening social cohesion, also includes ecological preservation, territorial autonomy, ethnic identity, and moral values (Langdon 2016; Wiedman, 1990). Since mental health problems are also complex phenomena, with several causal factors and ramifications, it seems adequate to adopt a complex approach when dealing with them, and also when aiming for prevention. In this sense, there is an increasingly urgent demand to stop using outdated approaches to treat mental health issues, not only in the field of GMH, but globally. We can see this demand being expressed by Western citizens who seek treatments involving ayahuasca and other psychoactive plants in traditional settings. This growing phenomenon should be a key object of reflection within the GMH framework. As the biomedical model seems to provide neither a suitable classification of mental disorders (Allsopp, Read, Corcoran, & Kinderman, 2019) nor effective treatments (Hyman, 2012; Rose, 2016), even the Special Rapporteur of United Nations asked to replace it with a human rights-based approach (Pūras, 2019). This approach would be better able to provide holistic, equitable, community-centered treatments, as it involves modulating the complex social determinants of mental health, not only organic or personal variables through individualistic approaches. This would undoubtedly be a better framework for the promotion and recognition of traditional rituals involving psychoactive plants.

Further reflection is necessary regarding the objectives of the GMH movement. This movement started with the intention to address the "treatment gap," providing mental health services in locations with little access~~extend psychiatric services developed in high-income countries (HIC) to other places where they are not available (generally LMICs~~). However, as Fernando (2011) noted, an important question remains: "has

psychiatry been such a success ~~here [in HICs]~~ to entitle us to export it all over the world?" Actually, there are many voices in HICs calling for a paradigm change in the field of mental health. The whole psychiatric nosology (represented by the Diagnostic and Statistical Manual of Mental Disorders or DSM) has been highly criticized, including by Frances, who chaired the task force responsible for the elaboration of the 4th edition of the DSM (Frances, 2014). Additionally, the treatments that have been developed in psychiatry are mostly pharmacological, and they have proven to treat only symptom severity at best (Bracken et al., 2012; Kleinman, 2012), and through non-specific mechanisms (Moncrieff & Cohen, 2005). The root of these challenges is partially found in the explanatory model that psychiatry has adopted. The model assumes that mental disorders can be classified in discrete categories and that their origin must be located in the brain, and that the cure should constitute treatments capable of correcting biochemical imbalances. Despite being attractive, this fundamental hypothesis has not yet been validated, since we do not have any biological markers for any psychiatric disorder (Lacasse & Leo, 2005; Rose, 2016).

T~~In this context, instead of "exporting" questionable mental health treatments, the GMH movement may offer an opportunity to "import" treatments and models from LMICs. Especially~~ Considering the recent interest in Western culture in the therapeutic potential of psychedelic drugs, as noted above, the traditional conceptions and uses of those plants and related-products~~drugs~~ can serve as a model for "modern" psychedelic therapies taking place in HICs. In contrast to oversimplified Western views regarding treatments and mental disorders, where therapists and patients meet in isolated offices to try to solve complex problems using intrapsychic conceptions of distress, maybe the most important thing that can be learned from traditional rituals involving psychedelic drugs is their complexity. In the cases discussed above, it can be easily observed that these practices involve several aspects both inside and outside of the ritual itself, constituting a long and extended process that can ~~finally~~ eventually help to promote and enhance mental health. Notably, the inclusion of traditional views (where social reconnection is emphasized) in modern psychedelic therapies involving psychoactive plants would be useful if we consider the detrimental effects of loneliness and isolation. There is substantial evidence that a perceived lack of social support predicts greater severity of symptoms, slower recovery, and worse treatment outcomes in people affected by depression, bipolar disorder, and anxiety (Wang, Mann, Lloyd-Evans, Ma, & Johnson, 2018). ~~Notably, some studies have suggested that loneliness is the main risk factor for psychosis (Michalska da Rocha, Rhodes, Vasilopoulou, & Hutton, 2018). However, the consequences of a low level of social support and loneliness extend far beyond the development of mental health problems. In fact, social isolation and loneliness are now considered major public health concerns, with some studies concluding that extreme loneliness increases the risk of premature death by more than 20% (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015). The effects of loneliness and perceived social isolation on life expectancy seem to be as detrimental as the effects of obesity, smoking, and hypertension. Indeed, people without social bonds are up to three times more likely to die from ischemic heart disease, cerebral vascular disease, or cancer over a period of nine years, as compared to individuals who have more social bonds (Ozbay et al., 2007).~~

~~If psychedelic drugs are used under the classic psychiatric paradigm, with the expectation that they will produce specific biological effects like penicillin does for a bacterial~~

~~infection, it seems likely that mental health treatments will continue to fail. It is then mandatory that, instead of exporting a model that is contrary to the social nature of humans, we learn from traditional systems where psychoactive plant rituals are performed within a community with the goals of enhancing community cohesion and promoting both mental and physical health.~~

~~In fact, ayahuasca and other South-American plants have gained popularity in Western countries. They are being used in ritualistic settings in a similar way as in their original cultures, and some authors consider these rituals as new self-care practices (Aixalá et al., 2019; Ona et al., 2019). So, in some ways, the importation of traditional practices involving psychoactive plants is already happening. In this sense, the GMH paradigm may also led to another turning point in which, instead of exporting a Western mental health model that does not work, the process may be the opposite, and could be understood as an "inverse colonization". Maybe the crisis of Western psychiatry may find its cure by learning from the cultures in which the GMH movement initially intended to help.~~

As can be clearly seen, the traditional use of psychoactive plants can be framed within recent trends in the GMH movement that effectively include a wide range of disciplines and approaches to the field (Kirmayer & Pedersen, 2014). Given that GMH practitioners seem to have shifted towards community-based, participatory, integral interventions that go beyond the strict biomedical approach, a focus on traditional psychoactive plants is timely and appropriate. This traditional practice is highly complex, involving not only pharmacological effects that can be elucidated, but also social, environmental, and cultural factors valuable to the GMH movement. As these advances go both ways, the contemporary use of psychedelic drugs, such as ayahuasca and psilocybin, in psychotherapy might also benefit from traditional knowledge, for which potentially supportive evidence has been found within recently developed paradigms, such as polypharmacology.

Conclusion

The GMH movement is moving towards ~~needs to~~ recognizing the vital role that local worldviews and practices can play in terms of addressing mental health issues. This article calls for the development of a new mentality on the part of the world's health authorities, whereby they should take advantage of the ~~availability of pluralistic medical systems in LMICs. The~~ traditional and communal~~istic~~ use of psychoactive plants, as ~~is a traditional practice~~ established in various cultures. ~~that~~ This traditional practice offers new ways to address mental health issues at a community level while respecting local worldviews and fostering social reconnection. Additionally, the therapeutic potential of psychoactive plants as a treatment for mental health conditions has been demonstrated in Western culture. These plants and their associated rituals might be~~are~~ crucial for improving healthcare practices. Moreover, they have the potential to bridge traditional practices and Western medicine combining the knowledges that can be obtained from either sides. ~~,~~

~~and they should be considered by international practitioners and advocates of the GMH movement not only in terms of respecting and promoting them in LMICs, but also with regards to trying to import some of these approaches to HICs, where effective mental health treatments are also urgently needed.~~

Authors' contributions

All authors contributed equally to this work. All authors read and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests.

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