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Examining the "worried well" phenomenon: insights from Italy's AIDS and STIs Helpline

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Abstract

Background. The fear of having contracted HIV or another sexually transmitted infection (STI), even in the absence of significant risk factors, is a globally observed phenomenon across diverse cultural, social, and healthcare settings. Helplines serve as a valuable observatory for this pattern, often described as "worried well" (WW). This study investigates the WW phenomenon with the objective of assessing whether the COVID-19 pandemic has acted as a compounding factor in its intensification.

Methods. AIDS and STIs Helpline of the Italian National Institute of Health (Istituto Superiore di Sanità, ISS) extracted data from a structured database and analyzed patterns related to callers' concerns.

Results. Between 2018 and 2023, 4,703 calls were analysed, showing how WWs represent 8.1% of all users and questions asked by WWs accounted for 7.8% of the total number of questions received by the AIDS and STIs Helpline.

Conclusions. While the COVID-19 pandemic may have contributed to an intensification of the WW phenomenon, its origins are more deeply rooted in factors such as psychological distress and limited health literacy.

Key words

- HIV
- AIDS
- STIs
- counselling
- worried well

INTRODUCTION

Over the years, several health services specializing in sexually transmitted infections have documented and examined the phenomenon commonly referred to in the literature as the "worried well" (WW).

Worried well individuals are those who experience excessive distress or anxiety concerning their health and who engage in frequent, often repetitive, health-related searches on the Internet, which tend to exacerbate rather than alleviate their concerns. In the context of HIV, AIDS, and other sexually transmitted infections (STIs), this phenomenon is particularly salient, as it often manifests as a pronounced form of health anxiety that can significantly impair daily functioning, occupational performance, and overall psychosocial well-being [1]. In the scientific literature, these subjects are often referred to as "worried well people" or as subjects suffering from venerophobia [2-5].

The terminology may imply the absence of pathological conditions; however, the state referred to as "worried well" can be profoundly debilitating for the individual.

It is inappropriate to dismiss anxiety associated with such conditions as clinically irrelevant solely due to the absence of identifiable risk factors, as this anxiety may in fact reflect an underlying pathological condition warranting clinical attention [6].

Evidence of this phenomenon has been documented by the Dutch AIDS Information Helpline, where individuals classified as "worried well" frequently utilize telephone-based services related to sexually transmitted infections. Notably, in approximately half of the calls received, users assessed their own risk profile as greater than that estimated by the operator, with the most commonly sought form of assistance being reassurance regarding the absence of risk. [7].

Based on the experience of the AIDS and STIs Helpline of the Italian National Institute of Health (Istituto Superiore di Sanità, ISS), these users repeatedly and insistently return to the same questions and/or specific topics, despite having already received comprehensive information and guidance during their initial call. Some of these individuals report no actual risk behaviors or, in cases where a potential risk factor is present, express fear of undergoing diagnostic testing

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or skepticism regarding the validity of previous negative test results.

These users require a significant investment of time and resources from the helpline professionals, who must therefore be adequately trained to implement telephone interventions grounded in specific counselling competencies.

Although the number of studies published on this phenomenon remains limited, it is nonetheless evident that the issue has assumed global dimensions, impacting both clinical and organizational aspects within counselling and screening services for infectious diseases, as well as in the fields of psychiatry and behavioral disorders. Moreover, it is important to highlight that this behavior can be observed across a wide range of contexts worldwide, varying significantly in terms of cultural, economic, and healthcare management systems, and it cannot be considered confined to specific health, socio-economic, or environmental conditions.

This article presents the findings of a study conducted over three consecutive two-year periods (2018-2019, 2020-2021, 2022-2023), aimed at determining whether the COVID-19 pandemic has exacerbated the phenomenon of pathological fear of STIs. This was assessed by comparing data across the three periods, defined respectively as pre-pandemic, pandemic, and post-pandemic. The study also seeks to identify the socio-demographic and behavioral characteristics, as well as the underlying motivations, of individuals who repeatedly contacted the AIDS and STIs Helpline of the Istituto Superiore di Sanità.

METHODS

The AIDS and Sexually Transmitted Infections Helpline (800 861061) – operated by the Istituto Superiore di Sanità and active since 1987 – delivers effective interventions aimed at the primary and secondary prevention of HIV, AIDS, and other sexually transmitted infections (STIs).

The service is situated within the Communication Division of the Operational Unit for Psycho-Socio-Behavioral Research, Communication, and Training (Unità Operativa Ricerca Psico-Socio-Comportamentale, Comunicazione, Formazione - UO RCF) of the Department of Infectious Diseases (Dipartimento Malattie Infettive, DMI).

Case definition: the Authors analyzed calls made by individuals who placed two or more calls to the TV AIDS and STIs Helpline within a 30-day period, exhibiting an unfounded fear of HIV and other STIs throughout the counseling intervention. Despite not presenting any significant risk factors for HIV or STIs in general, these individuals nevertheless fear being infected to the extent that they limit their social, relational, and sexual lives.

The telephone intervention is structured around the core competencies of counselling and is organized into phases according to the Communicative-Relational Operating Model. A dedicated data-entry interface and ad hoc software enable the storage and analysis of data collected during counselling activities.

Researchers from the UO RCF have developed the Communicative-Relational Operating Model (MO), based on the fundamental skills of counselling. This model facilitates the development of effective telephone communication with users, allowing for personalized responses through the integration of technical-scientific knowledge and relational-communicative competencies [8].

Data collection is carried out in a structured manner using a database specifically designed to ensure the security of large-scale information, whether stored on the institution's internal servers or in the cloud. In particular, cloud storage is configured to preserve data confidentiality, with data managed through a standardized data collection form.

Instruments: for each call, data are collected across various sections, including: frequency of calls per user (based on self-reported information), age, gender, personal characteristics either self-reported by the user or inferred by the operator from the context of the call, type of situation (real or hypothetical), topics of the questions – specifically modes of transmission, symptoms, questions about testing, emotional state, misinformation, and access to Pre-exposure prophylaxis (PrEP) and Post-exposure prophylaxis (PEP). A descriptive analysis of the aggregate data collected during the telephone interventions was performed using Access 365 software.

Data analysis/Results

The general data regarding calls made by WW users in the study period extending from 2018 to 2023 (4,703 out of a number of questions equal to 16,401), compared with the overall number of calls received by the service in the same period of time (53,068 out of a number of questions equal to 192,667) show how calls from WW represent 8.87%, and questions asked by WW users accounted for 8.51% of the total number of questions received by the AIDS and STIs Helpline (*Table 1*).

Sample characteristics

The data relating to age highlight that the population represented by the WW has a higher median age (41 years – IQR 33-47) compared to the general user population (35 years – IQR 28-42).

Analyzing the distribution of calls between the two genders, it emerges that women represent a significantly higher percentage among the WW (19.3%) compared to the percentage of women in the general user population (15.0%).

In 24.8% of calls from WW, users declare having already carried out more than one HIV test, compared to a percentage of 46.6% in the general user population. Just 12.2% of WW declare that they have never had an HIV test compared to a percentage of 38.3% in the calls of the general population.

Data highlight that calls made by WW users show the absence of risk factors in a percentage of 96.3%, whereas in calls from the general users population such percentage amounts to 76.9%.

The total number of questions formulated by the WW amounted to 16,401 compared to a number of 192,667 in the general user population. From the analysis of the requests formulated by the two population groups, we

can observe that the incidence of questions relating to the infectious potential and resistance of pathogens (17.1% in the WW group and only 5.4% in the general user population) shows significant statistical differences.

The differences found in the calls made by the two compared groups of users were statistically significant (p value<0.001) (*Table 1*).

The gender analysis carried out on calls by WW highlights how in 27.3% of cases the questions related to misinformation are asked by female users, while the requests on this topic by men represent 25%. As regards questions relating to the contagiousness and survival of pathogens, 18% of the requests were made by female users while 16.9% were made by male users. As for questions on the ways of transmission, male users are prevalent (18%) compared to female users, who represent 15% of calls. With regards to psycho-social aspects, female users return to being prevalent over male users (16.3% *vs* 15.8%). Finally, 17.1% of women and 15.6% of men ask for specific information on the diagnostic test (*Figure 1*).

RESULTS

Comparison between the numbers relating to calls from WW users in the three two-year periods of study

Analyzing the data relating exclusively to calls from WW users in the three periods under study, it emerges that there is a progressive increase in the median age (from 40 in the first two-year period to 42 in the third). This increase in age is particularly accentuated in the

Table 1
Table comparing call characteristics between worried well and general callers (without worried well)

	General calls without worried well n=53,068		Calls of worried well n=4,703			
Variables					**p-value**	**method**
N questions (means)	**192,667** (average of questions per call=3.9)		**16,401** (average of questions per call=3.5)			
Gender					0.000	chi square
Male	45,104	85.0%	3,794	80.7%		
Female	7,953	15.0%	909	19.3%		
Not binary	11	0.0%	0	0.0%		
Age						
Means age	35.8		40.9		0.0001	t-test indipendent samples
Median age	35		41			
IQR	(28-42)		(33-47)			
HIV in the past					0.000	chi square
No	20,343	38.3%	576	12.2%		
Yes	24,726	46.6%	1,595	33.9%		
Not indicated	7,999	15.1%	2,532	53.8%		
Questions with Risk factor for STI/HIV					0.000	chi square
No	52,131	76.9%	2,745	96.3%		
Yes	15,672	23.1%	105	3.7%		
Type of question					0.000	chi square
Ways of transmission	67,803	35.2%	2,850	17.4%		
Information on tests	56,632	29.4%	2,613	15.9%		
Psyco-social aspects	22,568	11.7%	2,609	15.9%		
Misinformation	14,703	7.6%	4,180	25.5%		
Contagiousness and survival of pathogens	10,487	5.4%	2,806	17.1%		
Prevention	7,749	4.0%	219	1.3%		
Symptoms	5,723	3.0%	281	1.7%		
Therapy and research	2,937	1.5%	136	0.8%		
Other	4,065	2.1%	707	4.3%		
Total	**192,667**		**16,401**			

IQR: interquartile range; STI: sexually transmitted diseases.

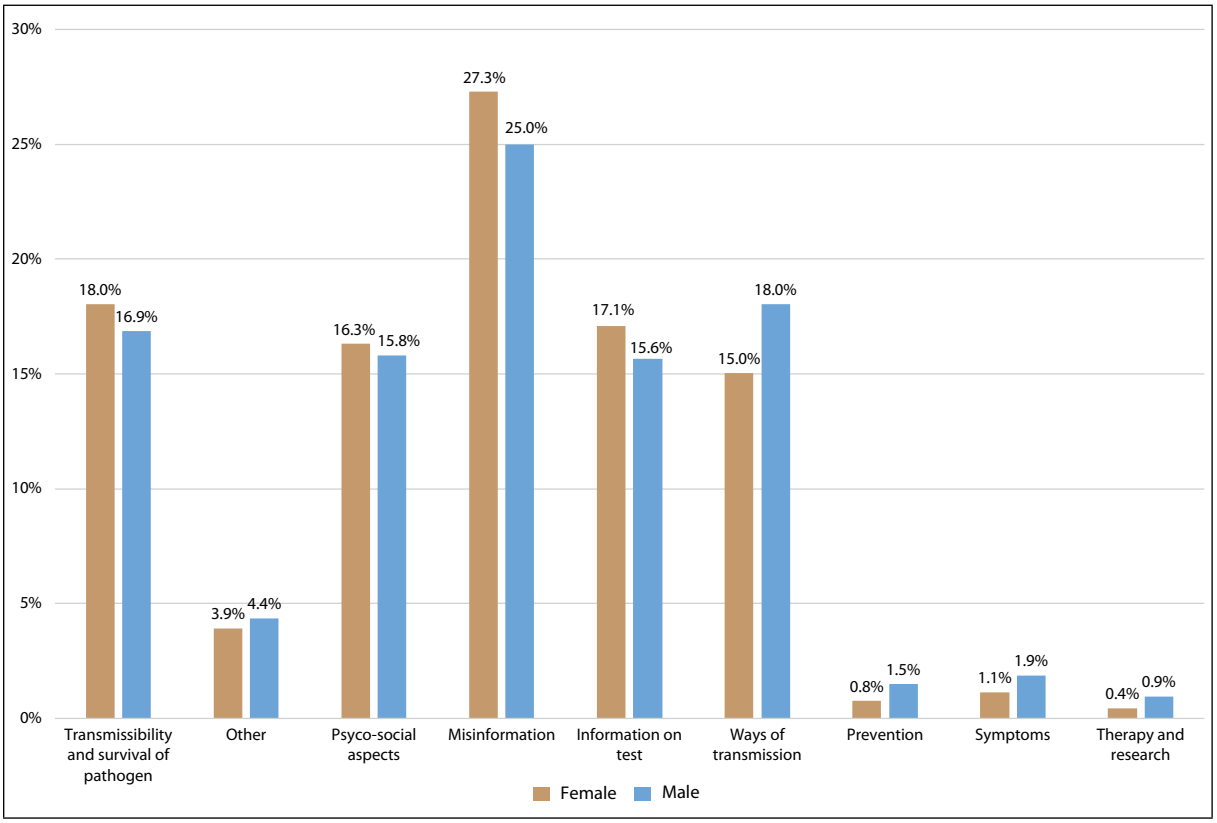

Figure 1
Gender analysis of calls by worried well (WW).

over 50 age group, raising from 15.0% in the first two years to 19.3% in the second and reaching 27.1% in the third two years period (*Table 2*).

In terms of geographical origin, there was an increase in calls from WW users declaring to live in the southern regions throughout the second and third two-year periods (35.1% in the second two-year period, 31.5% in the third, compared to 27.8% in the first).

The distribution of calls by users' gender shows an increase in calls from male users between the first and third two-year period (from 80.0% to 84.0%). As regards calls from women, the increase is significant in the second two-year period (21.0% compared to of 20.0% in the first), decreasing significantly in the third (16.0%).

The trend in the frequency of calls from WW in the three periods highlights a significant increase in the number of calls from individuals who repeatedly contact the Helpline (even more than 15 times), going from 34.7% in the first two years to 57.6% in the second, decreasing to 51.7% in the third.

The data relating to the number of HIV tests carried out shows that the percentage of calls from WW users who declare that they have never carried out the test drops from 13.9% in the first two years to 7.3% in the last, while the calls from WW who have carried out multiple tests pass from 22.9% in the first two years to 29.4% in the last.

On the other hand, there were no significant variations in the type of questions asked by WW users, with the exception of a modest increase, during the three two-year periods, in the number of questions relating to psycho-social aspects.

The data trends observed across the three analyzed periods suggest a likely significant association between the environmental conditions induced by the pandemic and the incidence of Helpline calls from users who may be classified as WW.

Over the course of the three two-year periods, the number of individuals contacting the AIDS and STIs Helpline due to an irrational fear of having contracted HIV, or of having been at risk of doing so, followed a trend that clearly highlights the complete absence of any actual risk factors in the majority of cases. Notably, there is a persistent subset of callers who, even after receiving scientifically accurate and up-to-date information about HIV transmission and the lack of any risky behavior, continue to seek further reassurance through repeated calls (*Table 2*).

DISCUSSION

The present study analyzes the characteristics of phone calls made by WW users across three two-year periods, highlighting the specific features of this group of calls and examining their quantitative and qualitative variations before, during, and after the COVID-19 pandemic.

The data show that the pandemic amplified the fears expressed by the study sample. The end of the pandemic only partially mitigated this effect, without returning to pre-pandemic levels.

Table 2
Comparison between the numbers relating to calls from WW users in the three two-year periods of study

Variables	Years 2018-2019		Years 2020-2021		Years 2022-2023		Total	
Geographical area	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
North	774	38.3%	501	33.2%	417	35.6%	1,692	36.0%
Centre	530	26.2%	359	23.8%	324	27.7%	1,213	25.8%
South	562	27.8%	529	35.1%	369	31.5%	1,460	31.0%
Islands	155	7.7%	118	7.8%	61	5.2%	334	7.1%
Not indicated	2	0.1%	1	0.1%	1	0.1%	4	0.1%
Total	**2,021**	**100.0%**	**1,507**	**100.0%**	**1,171**	**100.0%**	**4,703**	**100.0%**
Gender	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Men	1,618	80.0%	1,191	79.0%	985	84.0%	3,794	80.7%
Women	405	20.0%	317	21.0%	187	16.0%	909	19.3%
Not binary	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	**2,023**	**100.0%**	**1,508**	**100.0%**	**1,172**	**100.0%**	**4,703**	**100.0%**
Age	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
From 10 to 19	9	0.4%	6	0.4%	1	0.1%	16	0.3%
From 20 to 29	279	13.8%	213	14.1%	151	12.9%	643	13.7%
From 30 to 39	691	34.2%	424	28.1%	333	28.4%	1,448	30.8%
From 40 to 49	740	36.6%	573	38.0%	362	30.9%	1,675	35.6%
Above 50	303	15.0%	291	19.3%	318	27.1%	912	19.4%
Not indicated	1	0.0%	1	0.1%	7	0.6%	9	0.2%
Total	**2,023**	**100.0%**	**1,508**	**100.0%**	**1,172**	**100.0%**	**4,703**	**100.0%**
Call frequency	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
More than 15 calls	702	34.7%	868	57.6%	606	51.7%	2,176	46.3%
More than 5 calls	995	49.2%	487	32.3%	374	31.9%	1,856	39.5%
From 2 to 5 calls	326	16.1%	153	10.1%	192	16.4%	671	14.3%
Total	**2,023**	**100.0%**	**1,508**	**100.0%**	**1,172**	**100.0%**	**4,703**	**100.0%**
Previous HIV test	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
No	282	13.9%	208	13.8%	86	7.3%	576	12.2%
Not indicated	1,090	53.9%	809	53.6%	633	54.0%	2,532	53.8%
Yes, more than one	463	22.9%	357	23.7%	345	29.4%	1,165	24.8%
Yes	188	9.3%	134	8.9%	108	9.2%	430	9.1%
Total	**2,023**	**100.0%**	**1,508**	**100.0%**	**1,172**	**100.0%**	**4,703**	**100.0%**
Questions' topic	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Misinformation	1,725	26.0%	1,380	25.0%	1,076	25.3%	4,181	25.5%
Total	**6,632**	**100.0%**	**5,524**	**100.0%**	**4,245**	**100.0%**	**16,401**	**100.0%**

Notably, the median age reported in calls from WW users is significantly higher than that reported in calls from non-WW users.

Moreover, only 3.7% of WW calls report the presence of one or more risk factors, compared to 23.1% of calls from the non-WW user population. This suggests that the perception of infectious risk within the study sample is significantly more influenced by emotional factors and a distorted perception of reality than in calls made by non-WW individuals. This interpretation is supported by the fact that in 33.9% of calls from WW, users reported having undergone HIV testing despite the absence of identifiable risk factors.

These findings highlight how the use of diagnostic services without actual exposure to risk is highly prevalent within the analyzed sample, where both misinformation and emotional responses play a markedly disruptive role.

Misinformation was identified in 25.5% of calls from WW users, a significantly higher proportion compared to only 7.6% in calls from non-WW users. This finding is particularly noteworthy, as calls from WW clearly indicate a tendency to engage in obsessive online searches for detailed information about risk factors. However, this behavior does not appear to result in a genuine increase in awareness regarding the transmission and prevention of STIs.

It thus appears that the combination of limited health literacy – commonly observed in calls from both WW and non-WW users – and the distinctive emotional and personality traits characteristic of WW users renders this group of Helpline callers clearly identifiable. These observations are consistent with findings from multiple studies conducted over time on the WW phenomenon in various global contexts.

A number of observational studies, conducted in India and Nepal between 2017 and 2020, within clinical settings dedicated to dermatology and venereology [2-5], describe the characteristic traits of venerophobia, consisting of an irrational fear of having contracted a sexually transmitted disease (STD) following single or repeated sexual intercourse. This condition can have serious consequences on the good health and well-being of those affected.

The phenomenon has been observed mainly among young males and is often a consequence of sexual relationships with sex workers or of extramarital sexual relationships that are associated with feelings of guilt and shame.

In such cases, the altered emotional state and persistent anxiety are not necessarily associated with a complete absence of risk factors. However, a defining characteristic of these individuals is a persistent tendency to undergo repeated diagnostic testing for sexually transmitted infections (STIs), accompanied by a lack of trust in test results. This behavior is driven by an ongoing, obsessive monitoring of presumed venereal symptoms, either localized to the external genitalia or presenting at a systemic level.

The marked predominance of male subjects among individuals exhibiting such behaviors can be partly attributed to the higher frequency of occasional sexual encounters with sex workers within this group. Additionally, male individuals are more likely to directly observe presumed alterations or symptomatic manifestations of pathological conditions on their own genitalia.

The Authors of these studies underline how, in such cases, a dismissive approach on the part of the clinician in excluding any potential infectious risk, could result ineffective in overcoming the obsessive approach of the patient, no matter how clear the absence of risk factors is.

These studies also highlight a high incidence, in the group of patients analyzed, of anxiety and depression disorders associated with a wrong perception of potential infectious risks. This misperception is often linked to arbitrary interpretations of STD-related contents found online.

In a study reported online on Cambridge University Press in 2020 [9], the phenomenon of HIV worried well was analyzed in the European context by a group of professionals working within a clinical structure dedicated to psychiatry and mental health in the city of Porto, Portugal.

What emerges from the study highlights how the management of HIV-related WW people represents an extremely complex aspect from a psychiatric point of view, since these subjects, despite solid evidence regarding the absence of an infection and/or of concrete risk factors, continue to access healthcare facilities to carry out tests and other health checks, fearing that healthcare personnel may have made diagnosis errors.

Different kinds of painful and traumatic experiences are often found in the past history of these individuals: addictions, serious relational and family problems, psychiatric precedents, alongside with a poor ability to read and interpret informative materials on HIV and AIDS found online.

It should be emphasized that the incidence of various types of psychiatric disorders was found to be very high.

It is clear, however, that the phenomenon has assumed a global dimension over time, albeit with some specific traits in the different territorial, health and cultural contexts in which it is observed.

In this framework, it is noteworthy that in the Canadian province of Ontario, the Hassle Free Clinic – a network providing free medical and counselling services for sexually transmitted infections (STIs) and a key access point for anonymous HIV testing – found it necessary to implement specific counselling guidelines. These guidelines are directed at counsellors, healthcare providers conducting the tests, and educators, with the aim of facilitating the management of interactions with users exhibiting high levels of HIV-related anxiety despite having minimal or no actual risk exposure [10].

An additional aspect that warrants attention is the concern over the potential impact of an HIV-positive diagnosis on individuals' relational and social lives. In some cases, this concern appears to outweigh fears related to the physical health implications of the diagnosis, underscoring the enduring influence of HIV-related stigma, rooted in decades of stigma-laden media discourse.

In this connexion, it is useful to investigate whether the COVID-19 pandemic may have further accentuated anxious states and obsessive behaviors such as those described in the abovementioned studies, and whether the communication campaigns on infectious risks, the restrictions on people's freedom of movement and, in general, all the measures adopted to restrict the contagion, may have aggravated these conditions, where preexisting, and/or expanded the number of people with a similar profile, thus favoring the emergence of latent frailties.

The extant scientific literature indicates that social isolation, pandemic-related socio-economic challenges, uncertainties regarding transmission pathways, and fear of contagion have contributed to a marked increase in health-related anxiety disorders. In this context, the extensive experience accumulated over decades in addressing HIV infection and its associated stigma constitutes a valuable precedent for the design and implementation of targeted interventions. These interventions should aim to facilitate the referral of individuals to counseling and mental health services, thereby enabling effective mitigation of phenomena such as health-related anxiety and suicidal ideation [11].

Restricting the analysis to the European context (EU and EEA countries), an assessment of the consequences of COVID-19 on mental health highlighting a stron-

ger impact of the pandemic on the population, in terms of increase in the incidence of anxiety and depressive symptoms, is contained in the document titled "*Public health and social measures for health emergencies and pandemics in the EU/EEA: recommendations for strengthening preparedness planning*", published by the European Center for Disease Prevention and Control (ECDC) in March 2024 [12], in which it is stated: "*…In addition, the pandemic impacted on the mental health of the population in most European countries, reflected by increases in reported anxiety and depressive disorders…*".

Limitations

The limitations of this study were already taken into consideration in designing the statistical analysis.

They can be summed up as follows:

- telephone calls are anonymous, therefore users cannot be easily identified and followed over time, although the service operators, working as a team, are in most cases able to recognize the behavioral patterns and distinctive traits of most WW users;
- all the information collected during the counselling interview is self-reported by the user and there is no possibility of carrying out any objective checks or direct observations;
- it is not always possible to recognize users who call repeatedly, as the information they provide regarding their age, geographic origin, etc., can be modified by them over time. Nevertheless, teamwork and the recurrence of behavioural patterns greatly assist operators in identifying the origin of the WW calls;
- the telephone interview only allows the detection of the verbal and paraverbal elements of the communication, while the relevant non-verbal aspects in the relationship between the expert and the user are missing.

CONCLUSIONS

A significant finding emerging from the analysis of telephone calls made by WW users to the AIDS and STIs Helpline is the widespread lack of adequate cognitive and interpretive tools necessary to effectively filter, comprehend, and contextualize the extensive amount of online information available on STIs.

In this regard, it could be useful to interpret the phenomenon under study by also placing it in a broader framework. For many years now, the scientific community has been wondering about the extent of the effects produced by the inability of some individuals to recognize their incompetence with respect to certain subjects and the consequent construction of false beliefs in that field.

The effect of this unawareness is twofold: on the one hand, these people often reach erroneous conclusions, on the other hand, their unconscious incompetence deprives them of the metacognitive ability to recognize their own errors [13].

This lack of cognitive tools is actually found in a much larger number of users than that represented by the WW sample, and it might constitute an important indicator of a substantial absence of structured sexual education programs in school curricula.

As a matter of fact, though it is undeniable that the discomfort expressed by WW people often finds its most direct cause in traumas and problematic personal experiences which heavily influence the way in which sexuality is perceived and experienced by the individual, it can be assumed that improving quality education through the integration of sexual education and prevention of STIs programs into compulsory school curricula, would represent a valuable action to enhance good health and well-being and combat, or at least mitigate, the misinformation and the fallacious interpretation of scientific contents found online, of which the WW phenomenon represents a problematic fallout.

Nonetheless, it is crucial to point out that AIDS and STIs Helpline operators, upon identifying a call from a WW user, consistently endeavor to prompt the individual to reflect on the potential benefits of confronting their fears and cognitive distortions through engagement in a psychotherapeutic process.

Finally, as previously noted, the cultural perception of HIV infection – far more so than other sexually transmitted infections – has been deeply shaped over the years by media communication, as well as by cinema, literature, and social media. This layered cultural framing has significantly hindered efforts to combat the persistent stigma associated with the virus. Concurrently, the heightened attention and fear surrounding HIV complicate the ability of healthcare professionals to effectively communicate preventive information regarding other STIs [14].

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Availability of data and material

The collection of the relevant data gathered during the counselling interventions is based on a data-entry software, through which information relating to both the user calling and to the topic areas covered within the counselling intervention is anonymously collected and stored.

Code availability (software application or custom code)

The descriptive analysis of the aggregate data collected during the telephone interventions was carried out using the Access 365 software.

Authors' contributions

All Authors contributed significantly to the study design and interpretation of results and critically reviewed and approved the final version of the manuscript.

Conflict of interest statement

No potential conflict of interest was reported by the Authors.

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