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Review Article

Clowns, Clown Doctors, and Coulrophobia: A Scoping Review

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Introduction

Clown therapy in pediatric care settings is becoming increasingly popular. However, clown doctors encounter some children in their visits who are uncomfortable or express feelings of fear. This emotional state is also found among parents and health care personnel. The phenomenon, called coulrophobia, is little studied in the biomedical field, although it has been known for some time. It is deemed necessary to learn more about it to prevent anxiety and fear that is as harmful as it is unnecessary.

Objective

To identify, analyze and synthesize the available literature focused on coulrophobia.

Methods

Scoping review adhering to the framework of Arksey and O'Mally. Retrieval of studies by querying and consulting electronic databases and web resources. Screening of records, analysis of included studies, synthesis of data and information in narrative form and through tables.

Results

Twenty-six studies met the eligibility criteria. The prevalence of coulrophobia among children ranges from 1.1 percent to 6.1 percent. Mostly female and preschoolers are exposed, due to cognitive immaturity that limits the ability to distinguish between fantasy and reality. In adults, the prevalence of coulrophobia is between 18.6 percent and 53.5 percent and mainly prerogative of the female gender. The condition may be the result of childhood trauma associated with an encounter with a clown or mass media promotion of the figure of the evil clown. With some measures, clown doctors can try to prevent children's discomfort or fear.

Conclusions

Coulrophobia is a specific phobia falling under anxiety disorders that can have a significant and lasting impact in childhood and adulthood and therefore deserves further research.

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Introduction

Recent decades have seen widespread use of clown therapy in pediatric care settings. Clown therapy refers to the use of clowning techniques derived from the circus world in disease settings aimed at improving the

mood and reducing the state of anxiety and distress of children and caregivers [1]. The intervention is implemented by so-called clown doctors, medical clowns or clown therapists, specially trained figures who choose the clown disguise as a means of connecting with hospitalized children. To achieve the goal, they use entertainment and distraction techniques derived from improvisation, circus arts or theater. Through play, spontaneity and humor, they create a lighthearted atmosphere and promote the child's psychophysical relaxation [1][2]. The intervention is also able to reduce the consumption of analgesics and sedatives and facilitate the achievement of therapeutic goals [3]. Even so, in daily practice, clown doctors regularly encounter some children who do not appreciate their visits [4][5][6] or who express discomfort [7] or fear [8]. This emotional state is also found among parents and health care personnel [9][10]. The phenomenon, called coulrophobia, has long been known. A 1908 Parisian diary describing clowns in a London children's hospital has as the caption underneath the illustration the phrase: "to make children laugh," but the little patients seem bewildered rather than amused [7]. In January 2008, the University of Sheffield published a study in *Nursing Standard Magazine* based on the responses of 250 children about clowns on hospital wards; the researcher, Dr. Penny Curtis, found that the image of the clown is universally disliked by children and that most children find them rather frightening and unknowable [5][11]. Research shows that although coulrophobia is present in children and adults, has cross-cultural characteristics, and deserves due clinical attention as it is associated with significant comorbidities, psychological distress, and impaired functioning, it is poorly documented in the biomedical literature [10][12][13][14]. To prevent harmful and useless anxieties and fears during clown doctor performances, it is considered necessary to know the terms of the problem in depth. This could help children to fully enjoy the benefits deriving from the services provided by clown doctors and the latter to personalize their interventions as much as possible according to the previous experiences and unique characteristics of each child.

Objective

Through the identification, analysis and synthesis of the available literature centered on the phenomenon of coulrophobia, the objectives were to: (a) illustrate the main physical, psychological and social characteristics that identify the figure of the clown; (b) compare these

aspects with those typical of the clown doctor, highlighting similarities and differences; (c) recognise, if it exists, an affinity between humor and fear such as to justify coulrophobia and describe its identifying traits; (d) highlight the prevalence of coulrophobia in children and adults and, if they exist, highlight the differences of this pathological condition in the two subpopulations; (e) identify any measures that a clown doctor should implement to reduce the risk of coulrophobia in children.

Methods

A scoping review conducted in accordance with Arksey and O'Malley's framework [15], later revised by other authors [16][17][18], was implemented to answer the research questions. The process of conducting the study was done in accordance with the PRISMA Scoping Review checklist (PRISMA-ScR) [19]. The study protocol was registered on Open Science Framework (Registration DOI: <https://doi.org/10.17605/OSF.IO/4J9T3>). The objective was agreed upon and developed by both authors (LGR and MD).

Information sources and search strategy

The following biomedical databases were queried to identify relevant studies: The Cochrane Library, PubMed, EMBASE, CINAHL, PsycINFO, Scopus, and Web of Science. Web resources Google Scholar, International Bibliography of the Social Sciences (IBSS), Social Science Premium Collection, and Bielefeld Academic Search Engine (BASE) were also searched. The reference lists of eligible studies were analyzed to identify any additional studies. Both authors agreed on the use of the keyword "coulrophobia" for querying sources. The PCC (Population-Concept-Context) framework [17] of interest was as follows: P (Population) = individuals of any age and gender; C (Concept) = coulrophobia; C (Context) = any.

Eligibility criteria

We included studies that were primary or secondary, published or unpublished, peer-reviewed or not, (a) focused on coulrophobia, (b) available in full text, (c) published in English or another language, (d) without publication date restrictions. Studies in which coulrophobia was a marginal topic and/or available only as abstracts were excluded.

Selection of studies

The screening process consisted of two steps: (a) reading and analysis of title and abstract; (b) reading and analysis of full text. In the first step, one author (LGR) developed a title/abstract screening form that was reviewed by the second author (MD). The screening criteria were first tested on a pilot sample of ten abstracts to verify that they were robust enough to ensure that any paper that met the objective could be found. The modified criteria were reapplied and tested independently by the authors on a random sample of ten papers to verify consistency of selection. Disagreements were a matter of debate and the criteria were further refined until a common agreement was reached. The first author (LGR) reviewed the remaining titles and abstracts of all retrieved records to assess compliance with the eligibility criteria and, if so, retrieved the full text. In the second step, both authors independently re-evaluated the records. The reference lists of eligible studies were analyzed to identify additional resources. The search continued until saturation was reached, that is, until no more new eligible studies were identified. In case of any disagreements on whether or not to include some studies, they were reanalyzed a second time until full consensus was reached among the authors [20]. The process of screening the studies was documented in a flow chart in compliance with the PRISMA Statement [21]. A critical appraisal of the studies was not performed since it is not an essential part of a scoping review [15].

Data collection

The first author (LGR) developed a form for extracting the main characteristics of biomedical studies that reported data on the prevalence of coulrophobia; this form was reviewed by the second author (MD) for appropriate modifications. The form included the following data: first author; year of publication; objective; study design; Country; setting; participant characteristics; prevalence of coulrophobia. The authors pre-tested with two papers before implementing the data collection form to ensure accurate identification of useful data. For data extraction, the authors operated independently. After comparison, any discrepancies were discussed and resolved. The data collection form was created and refined using Microsoft Excel version 2016.

Synthesis of results

To achieve the best possible usability and ease of reading, the tabular format was preferred for the coulrophobia prevalence data and the narrative format for the summary of the main contents that emerged.

Results

Querying of biomedical databases and retrieval of web resources was performed on November 2, 2023. The PRISMA flow chart in Figure 1 [22] illustrates the process of selecting the retrieved records after the implementation of the search strategy. A total of 98 records were identified, 37 from biomedical databases and 61 from other sources. After removal of duplicates, irrelevant records following title and abstract reading, and those that did not lead to retrieval of the relevant documents, 26 reports corresponding to as many studies [4][5][6][7][8][9][10][11][12][14][23][24][25][26][27][28][29][30][31][32][33][34][35][36][37][38] were analyzed in full text and included in the scoping review. The studies cover a time span of 24 years, from 1999 [27] to 2023 [14][30]. Ten studies are humanities [5][11][23][24][26][27][28][34][35][36], among the sixteen biomedical studies, there are one commentary [37], one pre-post study with control group [30], one review [32], three qualitative studies [4][9][38], four editorials [7][29][31][33], and six cross-sectional studies [6][8][10][12][14][25]. Seven humanities studies are U.S. [5][23][24][26][27][28][36], one is British [34], one is Australian [35], and one is South African [11]. Five biomedical studies are British [8][9][10][14][29], three are Australian [4][7][33], two are Dutch [37][38], one is German [25], one is Chinese [30], one is U.S. [31], one is Puerto Rican [32], one is Israeli [6], and one is South African [12].

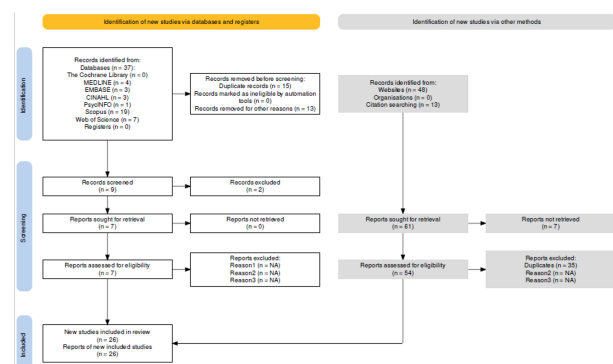


Figure 1. PRISMA flowchart.

The clown

The clown as we know him is the evolution of the joker, the court fool [28], who was the only one allowed to mock and criticize the ruler. The Fool in the tarot cards is usually depicted colorfully dressed, with his possessions tied in a bag at the end of a walking stick he carries on his shoulders, often with a dog as a companion; he takes the form of a traveler, an entertainer, a simple or penniless person without status, power or intellect [23]. But as an outsider he presents invisible potentialities or expresses unthinkable thoughts [23]. He is at the same time at home in the real and the imaginary because he knows no boundaries: he disrupts what is ordered and in this way makes it possible to experience what is not allowed [23]. He simultaneously plays the village idiot or the harmless eccentric; he is unimpressed by sacred ceremonies or the power of rulers; he is openly blasphemous and provocative; he is also uninhibited in sexual matters and delights in obscene humor, with behavior that openly subverts social norms beyond human common sense [28]. According to Shakespeare, the madman was the possessor of a caustic wit who through humor pointed out the weaknesses of humanity [7].

The stereotypical circus clown is characterized by the following attributes [11][14][23][28][34][35]: (a) an often red wig, exaggeratedly arched eyebrows, an oversized red nose, a broad bright red smile imprinted on a completely white face, a high forehead, and a wide belly and/or buttocks [35]; (b) scruffy, gaudy, and extravagant clothing, either too loose or too tight with battered, oversize shoes; (c) impossible jargon, tripping and falling over everything, acrobatic virtuosity, and supernatural physical resilience.

These attributes create a grotesque figure [11] with the ultimate purpose of moving the audience to laughter, not necessarily to cheer them up. In fact, the grotesque comedy generated by the clown may have a negative and undesirable twist from the above attributes: (a) the red color of the wig recalls a common belief dating back to the Middle Ages that red hair indicated sanguine and violent character, moral degeneracy and sexual deviance [14]; (b) the large red nose suggests an individual in an obvious state of alcoholic intoxication [28]; (c) the face painted white recalls a condition of illness if not death [11][34][36]; (d) the fixed expression rendered by the design of the eyebrow arches and the exaggerated smile of an oversized mouth are disturbing elements that emphasize the paradox of

a smiling mask that acts independently of the face on which it is painted; this generates the difficulty of understanding the clown's real intentions through the interpretation of his facial expressions [11][34]; e) the exaggeratedly deformed physique is disturbing because it does not comply with the paradigms of the human form [11][35]; f) The dress reflects the image of a social outcast, a homeless person who is a victim of dissipation, economic deprivation and an unjust fate [23]; (g) unintelligible language, clumsiness in movements and refined acrobatics are reminiscent of the effects of heavy intoxication [36]; (h) suffering without consequence an endless series of falls and injuries of various kinds that would be fatal to any person suggests that one is dealing with a nonhuman being [35].

The motion of disquiet about the clown originates from the discrepancy between the audience's expectations of his role as a comic entertainer and his true intentions, which are obscure and inscrutable [36]. A perpetually fixed smile is indeed dissimulative, hypocritical, false, unreliable and belongs to an ambiguous personality [34]. Constant happiness is viewed with suspicion and interpreted as a form of mental derangement: no sane man can always be so happy [11]. His gross physical features suggest a distorted, disproportionate, undisciplined, insatiable organism with something perverse about it [11]. He can lash out in sudden outbursts of anger that are as illogical and disturbing as his general behavior, lacking any capacity for discernment [11]. When he no longer represents the disarming comic vis of insanity, he is reinterpreted as a figure of horror, as his being insane becomes threatening because of subversive, deviant, and sometimes violent behavior [11][12].

The clown represents an allegorical figure of humanity's weaknesses and imperfections, which he highlights with his humor [23]. He brazenly and impertinently lays bare our innermost and most primal emotions such as ambition, hatred, laziness, envy, jealousy, and untroubled happiness; he breaks cultural taboos and sits outside the decorum, propriety, and censorship of society [11][23]. What we see in him as abject is the fact that he disrupts the identity, the system, the social order made up of well-defined categories where no interstitial space is allowed [11] and ostentatiously and swaggeringly showcases the continuous tension between order and disorder of which man is a victim [23]. His being transgressive identifies him as a social outlaw in that he feels entitled

to do things that ordinary people cannot do; in this sense he represents a mirror in which each of us sees our own madness as well as our own resilience portrayed [28]. He upsets us and can even instill fear in us, because after all, he is entirely like us: he is an adult who is acting like the child we continue to be [28]. When we laugh at the clown we are laughing at ourselves but it may be a bitter laugh [8].

The clown doctor

It is important to distinguish between the therapist clown or doctor clown and the circus clown or one encountered at children's parties [29]. The figure of the therapist clown is more regulated, toned down, and, so to speak, "naturalized": this clown poses as a comedian and entertainer and overshadows the typical traits of the circus clown that classically characterize him as a violating, transgressive, paradoxical, and disturbing allegorical figure [11]. Makeup is minimal [6][8] to the point of being reduced to just the red nose, "the smallest mask in the world," in the words of Jacques Lecoq, distinguished French mime [11].

The clown doctor relieves stress and anxiety in children in the hospital, supporting them with the aim of restoring, maintaining, and improving their mental, physical, and emotional well-being [29]. This is done by using spontaneous comedy, improvisation, juggling, magic, mime, storytelling, music, and by choosing the most appropriate interventions for each individual child according to age, cognitive development, preferences, temperament, and clinical conditions [29]; through play and imagination, the clown doctor puts the child in touch with normally repressed emotions [23]. He or she can disarm painful and frightening situations and experiences by subverting conventions so that the roles of doctor (clown) and child are reversed and the latter takes control of his or her own health condition [4][23][32][39]. Disrupting hierarchies and changing the order of things puts the child in a position to regain some of the power he or she loses when hospitalized and to temper fears and unfamiliarity of the hospital environment through "teasing" of medical practices and objects in common use in the hospital [32]. For example, the tympanic thermometer becomes a telephone that does not work, a parent wrapped in toilet paper has wounds comparable to the child's, and the screen between the beds becomes the curtain of a play [4].

Coulrophobia

Humor is a quality closely woven into the cultural fabric in which it originates and enables survival in difficult environments and situations [24]. Its development is essential and necessary for a healthy human experience [23]; when it is self-conscious, as in clowning, it responds to the individual and social need to make sense of, cope with, and survive the sometimes unbearable burden of numerous human imperfections [23]. According to the incongruity theory of humor [40], comedy is related to the act of transgressively making fun of categories, concepts, norms, and expectations commonly accepted and shared by members of the society from which they originate.

The affinity between humor and fear stems from the object of interest of both these states: the transgression of one of the elements listed above [27]. When, for example, a category such as normal/anomalous, beautiful/ugly, good/bad, alive/dead, orderly/disorderly becomes outwardly indiscernible or ambiguous, it may at the same time move one to laughter or instill fear, depending on how one is inclined to handle this inconsistency [27][36]. When the clown's characters of ambiguity, transgression and incongruity instead of producing amusement in the beholder result in disorientation, discomfort and avoidance, this can foster the onset of the phenomenon of coulrophobia.

Coulrophobia is defined as a persistent, abnormal and irrational fear aroused by clowns [6][23][28][29][34] or their images and may be accompanied by significant distress [12]. Some authors [37] dispute the use of the term "irrational," as they argue that fear of something harmless may be irrational as long as there is no realistic possibility that what is feared is actually harmful; defining coulrophobia as always irrational could exacerbate the social stigma of those suffering from this specific anxiety disorder and cause them to experience difficulties in manifesting their condition; in addition, there could be negative implications on the reliability of prevalence data.

According to the most recent version of the Diagnostic and Statistical Manual of Mental Illnesses-Fifth Edition-Text Revision (DSM-5-TR) [41], coulrophobia is made to fall under the class of anxiety disorders and is given the International Classification of Diseases-Tenth Revision-Clinical Modification (ICD-10-CM) code F40.298 "Other" (situations that may lead to choking or vomiting; in children, for example, loud sounds or costumed characters).

Prevalence of coulrophobia

Five studies have evaluated the prevalence of coulrophobia [6][8][14][25][38]. Of these, four [6][8][14][25] are cross-sectional studies whose methodological quality, assessed post hoc with the STROBE tool [42], was found to be good.

Coulrophobia in children

Three studies have evaluated the prevalence of coulrophobia in children [6][8][25]; the range is from 1.1 percent [25] to 6.1 percent [8]. The age range is between 1 and 16 years. One study [6] found that the prevalence of children with coulrophobia in a severe form is 0.5 percent, the average age of coulrophobic subjects is 3.5 years, and the female gender predominates (Table 1).

Laughter, mirth and play are an essential part of childhood; one of the lessons, perhaps the main one that the clown gives to the child, is the ability to laugh at oneself [32]. But if at this stage of life the adult's attitude is critical of fun and comedy and directed rather toward the concept that "life is serious," the child may be uncomfortable with the joyful distraction provided by the clown [32]. For some children, the clown is funny and hilarious from afar, when operating in a circus arena; but up close, perhaps invading proxemic space, he may appear to their imaginative minds as a menacing figure [11]: suddenly, the cheerful mask reveals an unfamiliar face whose unkempt beard can be glimpsed under heavy makeup, a less-than-happy expression, and the absence of a real smile behind the one painted red [28]. The clown's potential for insanity can also disturb the child: it is revealed when the clown no longer seeks to trigger and nurture the child's joy but acts to satisfy his own needs, taking control of the power and turning the child into the target of his pranks [11].

Especially preschoolers (2-5 years old), due to their cognitive immaturity, have a limited ability to distinguish between fantasy and reality and difficulty understanding transformations, becoming particularly upset when a benign-looking character turns into a disturbing figure [5][26][28]. The clown may take the

form of a somewhat silly and strange adult, an unfamiliar figure [23] with an underlying ambiguity that makes it unreliable and worthy of suspicion [4][5][7][32][33][34]. School-age children come to understand the difference between fantasy and reality, so they are less likely to be frightened [26]; however, generally a child is more willing to respond with laughter to a relative's antics than when the adult is a stranger, in which case a sense of threat and insecurity prevails over amusement [5][27].

The same pictures of clowns, often used to decorate the walls of pediatric wards, are usually disliked by children; they portray clowns generally wearing full makeup so they also appear "scarier" than doctor clowns, who instead frequently wear only a red nose and colorful clothes [29].

Coulrophobia in adults

Four studies have assessed the prevalence of coulrophobia in adults (general population, physicians, nonmedical health workers, parents) [6][8][14][38]; the range is from 18.6 percent [8] to 53.5 percent [14]. The age range, when declared, is between 18 and 77 years. One study [14] found that the prevalence of adults with coulrophobia in a severe form is 5.1 percent; in addition, the female gender is more prone to this anxiety disorder, which tends to decrease with advancing age (Table 1).

In adults, coulrophobia may be the result of childhood trauma associated with an encounter with a clown [28] or be associated with the mass media's promotion of the figure of the evil clown through movies such as *It* or *Poltergeist* [14][23][30]; however, several people who suffer from this anxiety disorder are adults who had their formative experiences during childhood before the phenomenon developed [28]. As with children, coulrophobic adults are also troubled by the clown's made-up face and the resulting inability to read authentic emotions into it [5][6][14], in addition to the fact that the distortion of facial features achieved by makeup gives them an interstitial category of belonging, somewhere between human and nonhuman [14].

<i>Study (Year)</i>	<i>Objective</i>	<i>Study design and Country</i>	<i>Setting</i>	<i>Sample</i>	<i>Coulrophobia prevalence</i>
Barkmann (2013)	To evaluate the hospital clowning offer in Germany and to evaluate the hospital clowning intervention according to the point of view of parents and ward staff	Cross-sectional study Germany (investigation tool: questionnaire)	4 hospitals in Germany + online recruitment	87 clown doctors 37 parents 43 nurses (age range: not declared)	Children: 1.1%
Batrick (2007)	To highlight the perceptions of healthcare professionals, doctors, parents and children regarding the effectiveness of Theodora Trust Special Clowns performances	Cross-sectional study UK (investigation tool: questionnaire)	Southampton Children's Hospital	93 non-medical healthcare professionals (73 nurses) 16 doctors 43 parents (age range: not declared) 49 children (age range: 3 -16 years, 57.1% male)	Non-medical healthcare workers: 23.7% Doctors: 37.5% Parents: 18.6% Children: 6.1%
Meiri (2017)	To investigate the prevalence of coulrophobia in children admitted to hospital	Cross-sectional study Israel (investigation tool: ad hoc checklist)	Department of Pediatrics and Pediatric Emergency Medicine, Carmel Medical Center and Technion Faculty of Medicine	1160 children (age range: 1-15 years, 50% male) who visited the emergency room and pediatric department, visited by clown doctors during their hospital stay; excluding hemodynamically unstable children or those requiring emergency care	Children: 1.2% (average age: 3.5 years, 14.3% male) 0.5% in severe form
Tyson (2022)	To investigate the prevalence of coulrophobia in the adult population and the level of severity in those who reported it	Cross-sectional study UK (investigation tool: Fear of Clowns Questionnaire - FCQ)	–	Online recruitment of 987 adults (age range: 18-77 years, 20% male)	Adults: 53.5% (20% male) 5.1% in severe form - The female gender is more exposed to severe form - As age increases, the fear of clowns is reduced
van Venrooij (2017b)	To investigate the current position of hospital clowns from the point of view of pediatricians and pediatric residents	Qualitative study (focus groups) Netherlands	- The Hague Hospital - Leiden University Medical Center	14 pediatricians or pediatric residents (age range: 24-43 years, 100% female)	Pediatricians or pediatric residents: 28.6%

Table 1. Studies reporting the prevalence of coulrophobia.

How to prevent coulrophobia in children

The steps that a clown doctor should implement to prevent if possible the discomfort or onset of genuine fear in children include the following: (a) obtain the child's and family's consent before proceeding with the performance ^{[9][32]}; (b) put the focus on the child, not the performance ^[9]; (c) have an empathetic approach during the interaction with the child and family ^[9]; (d) carefully consider the appropriateness of a joke or active involvement of the child, as they must take into account the characteristics of the individual they are directed toward and the clinical context in which they are implemented ^[32]; (e) make up the face only lightly or not at all, "wearing" even just a red nose ^[5]; (f) respect the child's proxemic space, which varies according to the child's temperament, and do not cross it without the child's explicit consent ^[11]; (g) if the child is known to have high levels of anxiety, meet the child before the performance by making himself known without a red nose or makeup ^{[32][38]}.

Discussion

The circus clown possesses deliberately disproportionate constituent elements to foster grotesque comedy. The motion of disquiet and disturbance that arises towards him may result from the most extreme application of the concept of the grotesque. Indeed, in the portrait of the clown, man finds to the nth degree all those negative characteristics of himself that make him embarrassed or uncomfortable and with which he would not like to be confronted, such as the innermost and most primal emotions, fallibility and incompleteness, and madness.

The clown doctor presents himself as a comedian and entertainer and overshadows those circus clown traits that characterize him as a grotesque figure. Makeup is minimal; sometimes the mask consists only of a red nose. He puts the child at the centre, not his own performances; he disarms painful and frightening situations and experiences by subverting conventions, so that even in a foreign environment such as the hospital the child regains self-control. Furthermore, he helps to temper fears and the sense of strangeness by

making fun of medical practices and objects commonly used in that environment.

When the clown's characteristics of ambiguity, transgression and incongruity do not produce amusement but rather disorientation, restlessness and avoidance, the phenomenon of coulrophobia can be triggered. It is defined as a persistent, abnormal and irrational fear aroused by clowns ^{[6][23][28][29][34]} or their images and may be accompanied by significant distress ^[12]. The use of the term "irrational" is criticized by some authors ^[37], who believe that defining coulrophobia as irrational may further stigmatize people suffering from this anxiety disorder, preventing them from expressing their condition and thus affecting on the reliability of prevalence data.

The prevalence range of coulrophobia in children is 1.1-6.1 percent; preschool and female children seem to be more affected. Preschool children have cognitive immaturity and a limited ability to distinguish between fantasy and reality, so the underlying ambiguity of the clown and the fact that it is an unfamiliar figure could appear to them as an unreliable being. Older children are less likely to get scared; but even among them, the sense of threat and insecurity can prevail over the fun of the antics of an unknown, strange and slightly silly adult.

The prevalence range of coulrophobia in adults is wide and equal to 18.6-53.5 percent; the female gender seems to be more affected and the disorder tends to reduce with increasing age. In adults, coulrophobia can be the result of childhood trauma associated with an encounter with a clown or the promotion of the figure of the evil clown by the mass media. Even coulrophobic adults are disturbed by the clown's made-up face and the resulting distortion of facial features, which gives him a less than entirely human appearance.

The clown doctor should first ask for consent from the child and family before any type of performance. Furthermore, they should reduce make-up to a minimum, place the child at the center of attention, have a good degree of empathy to be able to read the first signs of discomfort, focus the performance on the characteristics of the little patient and respect their proxemic space. In the case of children with high levels of anxiety it would be advisable for the clown doctor to

appear to them without make-up before the performance.

Open problems

The biomedical studies included did not conclusively offer insight into the prevalence of coulrophobia in children and adults: so far, research addressing this anxiety disorder is limited. Added to this is a definition of coulrophobia not yet shared by everyone and which leaves room for the assignment of this disorder even to subjects who react with discomfort and avoidance, not with fear, when faced with a clown, with substantial effects on the prevalence values.

Currently, coulrophobia has no dignity of its own; the latest version of the DSM-5-TR assigns it the code F40.298, which corresponds to those anxiety disorders, of which specific phobias such as coulrophobia are part, which cannot be classified in those previously described by the manual. Yet, specific phobias have a well-established role within anxiety disorders.

In Italy, the first (and only) epidemiological study on the prevalence of mental disorders took place between 2001 and 2002, part of the European project European Study on the Epidemiology of Mental Disorders (ESEMED) [43]. The aim of the study was to map the 12-month and lifetime prevalence of the main non-psychotic mental disorders, including anxiety disorders. The study was conducted on 4712 people, identified as a representative sample of the general population of both sexes; each of them was subjected to a structured computerized interview whose core is represented by the Italian version of the Composite International Diagnostic Interview (CIDI). The results showed that specific phobias are among the most common disorders, with a lifetime prevalence of 5.7 percent and a 12-month prevalence of 2.7 percent and with the female gender being more affected than the male gender.

Assuming that the prevalence data twenty years after the survey are still reliable and calculating the adults currently present in the country at around 54 million [44], it can be deduced that Italians affected by specific phobias throughout their lives and at 12 months they could be equal to over 3 million and almost 1.5 million units respectively. It is reasonable to think that these numbers also include coulrophobic subjects.

Coulrophobia appears to be a gender-specific disorder which in the pediatric context mostly involves pre-school children (2-5 years). However, further research is needed to confirm these data, in light of the breadth of the pediatric age range considered, the unsatisfactory

sample size and the fact that the cross-sectional studies have seen predominantly female participation. There is a lack of studies that have dealt with coulrophobia in children in different settings such as the emergency room, rehabilitation and oncology. Among adults, the phenomenon is still too little known and deserves to be explored with further research. Although several authors agree that the phenomenon is transcultural, no research has been found that has addressed coulrophobia according to this approach. Finally, it would be desirable for future research to investigate not only the ways of preventing coulrophobia but also the responses to adopt if it occurs.

Strength and limitations of the study

To the best of our knowledge, this is one of the few studies and the first scoping review that addresses the topic of coulrophobia. Unfortunately, despite efforts to obtain all available literature, it was not possible to find seven studies of potential interest. The documents included involve nine countries and five continents, however the contribution of the USA and UK is prevalent; this places limits on the generalization of the considerations made on the phenomenon of coulrophobia and its prevalence in other cultural realities. Due to the limited availability of material resources and time, we did not query other databases of potential interest (e.g. Anthropology Plus via EBSCO) which could perhaps have added further information to describe and understand coulrophobia in even more depth and to highlight the ethnographic and cultural variables of the phenomenon.

Conclusions

Coulrophobia is a specific phobia included in anxiety disorders that can have a significant and lasting impact in childhood and adulthood. Despite this, it is a phenomenon that is still little treated and deserves further research, considering the fact that its prevalence is not negligible, equal to 1.1-6.1% of children hospitalized and 18.6-53.5% of the adult population and which is associated with significant comorbidities, psychological distress and impaired functioning. Early recognition in the pediatric field by healthcare workers of children at risk can allow the clown doctor to propose some measures to optimize the effectiveness of his performance and at the same time prevent or at least reduce the onset of coulrophobia.

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