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ORIGINAL ARTICLE

Trypophobia: an investigation of clinical features

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Objective: Trypophobia refers to the fear of, or aversion to, clusters of holes. We assessed clinical features of trypophobia and investigated whether it most resembled a specific phobia or obsessive-compulsive disorder.
Methods: An online survey was conducted to gather information on sociodemographic variables, course and duration, severity, associated features, comorbid psychiatric diagnoses, and levels of psychological distress and impairment in individuals with trypophobia. The survey also explored whether such individuals experienced more fear or disgust, and whether symptoms showed more resemblance to a specific phobia or to obsessive-compulsive disorder. Associations of symptom severity and duration with degree of impairment were investigated.
Results: One hundred and ninety-five individuals completed the questionnaire. Symptoms were chronic and persistent. The most common associated comorbidities were major depressive disorder and generalized anxiety disorder. Trypophobia was associated with significant psychological distress and impairment. The majority of individuals experienced disgust rather than fear when confronted with clusters of holes, but were more likely to meet DSM-5 criteria for specific phobia than for obsessive-compulsive disorder. Symptom severity and duration were associated with functional impairment.
Conclusions: Given that individuals with trypophobia suffer clinically significant morbidity and comorbidity, this condition deserves further attention from clinicians and researchers.

Keywords: Trypophobia; specific phobia; obsessive-compulsive disorder; internet survey

Introduction

Trypophobia refers to a pathological fear of, or aversion to, clusters of concave objects (holes) or objects reminiscent of clusters of holes.[1] Individuals report a phobic or aversive response to such stimuli, ranging from the visual markings of poisonous fish to seemingly innocuous images such as water condensation, beehives, sea sponges, and seed-pods. Individuals with trypophobia report that the visual quality and spatial properties of such stimuli trigger discomfort.[2-5] This may differ from phobic or aversive responses to a range of other stimuli, such as small animals, where the individual is uncomfortable in the presence of a non-visible animal. It has been suggested that trypophobia involves images with a particular spectral profile rather than clusters of holes *per se*.[6]

On the one hand, this set of symptoms would seem to be an unusual one, perhaps rarely encountered by the clinician. However, with the emergence of the internet and virtual support groups, and the ability of more people to share information about their concerns and fears, it turns out that trypophobia may not be an uncommon phenomenon. With the growth of online image sharing, a considerable number of individuals have realized that they share a revulsion to photographs of clusters of holes – a revulsion that can reach the level of significant nausea.[7]

There are several internet-based support groups for trypophobia, including a social media profile (https://www.facebook.com/groups/3318322299/) in which more than 12,000 people have provided testimonials and shared their experiences of living with the fear of or aversion to clusters of concave objects. Individuals describe these images as haunting and as evoking fear, panic attacks, revulsion, and distress, as well as a wide variety of somatic symptoms, such as nausea, goosebumps, and itchiness. However, trypophobia has not yet been well characterized by clinicians, and is still largely unreported in the scientific literature.

In this paper, we report the results of a survey of members of an internet-based support group for people with trypophobia. We addressed the following clinical features: sociodemographic factors, course and duration, severity, associated features, comorbid psychiatric diagnoses, levels of psychological distress and impairment, and history of treatment. In addition, we explored whether trypophobia showed more resemblance to a specific phobia or to obsessive-compulsive disorder, and whether trypophobic stimuli more often triggered feelings of fear or disgust. Associations of symptom severity and duration with impairment were also investigated.

Methods

The study was approved by the University of Cape Town Faculty of Health Sciences Human Research Ethics

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Committee, and informed consent was obtained from all participants.

Sample

Adult (18 years or older) members of a Facebook support group for trypophobia, which consists of more than 12,000 members, were included in the survey. One hundred and ninety-five questionnaires were answered, a response rate of 1.6%.

Questionnaires

An online self-report questionnaire designed to address sociodemographic variables, course and duration, severity, associated features, and comorbid psychiatric diagnoses was administered. The Kessler Psychological Distress Scale (K10)[8] and the Sheehan Disability Scale (SDS) were used to measure psychological distress and impairment respectively. The SDS utilizes three independent (work, social life, and family life) disability measures; a score of 5 or greater on any of these scales is indicative of significant functional impairment.[9] Also included were items addressing treatment history. Items from the Zohar-Fineberg Obsessive Compulsive Screen (ZF-OCS)[10] and questions derived from the DSM-5 diagnostic criteria for specific phobia and obsessive-compulsive disorder[11] were included to assess whether trypophobia showed more resemblance to a specific phobia or to obsessive-compulsive disorder. Respondents were also asked whether trypophobic stimuli triggered feelings of predominant fear or disgust.

Statistical analysis

Descriptive statistics were calculated (means and standard deviations for continuous variables and frequencies for categorical variables). *T* tests and chi-square analyses were used as appropriate to compare the group of individuals who experienced predominantly fear to the group of individuals who experienced predominantly disgust in relation to their trypophobia. Pearson correlation coefficients were used to measure the strength of linear associations between variables.

Results

Sociodemographic features

Respondents were predominantly female (83.6%). Age ranged from 18 to 80 years (mean: 36.4±12.9). Overall, 77.4% of subjects had completed high school, and 57.4% had completed a university or college degree; 40% of subjects were married, while 26.7% were single and had never married; 53.5% of subjects were employed full time, 11.3% were completing further studies, and 8.2% were employed part time. Respondents from all over the world participated, but the majority resided in the United States and the United Kingdom.

Clinical features

Precipitating factors and family history

Most respondents (78.5%) reported that they did not have a previous distressing experience involving holes or clusters of holes that might have predisposed them to developing trypophobia. Regarding family history, 24.6% of respondents had first-degree relatives with trypophobia.

Course and duration

Symptoms were chronic and persistent, with a mean age at onset of 17.5±12.9 years (range: 4-75). The mean duration of symptoms at the time of the survey was 18.0±15.1 years (range: 0-60). Most respondents (82.6%) denied having even brief periods of remission of symptoms. A mean of 5.4±9.5 hours per week (range: 0-75) were spent worrying about clusters of holes. Overall, 20% of respondents reported experiencing trypophobia once a day, 39.5% once a week, 25.1% once a month, 9.7% once a year and 2.6% less than once a year. 81% of respondents experienced symptoms even when not directly confronted with clusters of holes (for example, they worried about coming into contact with clusters of holes).

Severity

Only 14.4% of respondents reported no anxiety related to their trypophobia; 24.1% of respondents reported mild anxiety, 29.7% reported moderate anxiety, 15.4% reported severe anxiety without panic attacks, and 16.4% reported severe anxiety with panic attacks. Respondents who experienced panic attacks had a mean of 4.4±5.4 panic attacks per month (range: 1-25).

Associated features

The most common symptoms experienced by respondents when confronted with clusters of holes were itchiness (67.2%), goosebumps (67.2%), and nausea (53.8%). 45.6% of respondents felt embarrassed by their trypophobia.

Comorbid psychiatric diagnoses

The most prevalent psychiatric comorbidity was major depressive disorder (19.0% of respondents had been diagnosed, while another 8.7% suspected that they suffered from this), followed by generalized anxiety disorder (17.4% of the respondents had been diagnosed, while another 11.8% suspected that they had the diagnosis). Other diagnoses were less prevalent; 8.2% had been diagnosed with social anxiety disorder, and another 13.9% suspected that they had the diagnosis; 6.2% had a diagnosis of panic disorder, while another 8.2% suspected that they suffered from this; 3.6% of participants had been diagnosed with bipolar disorder, but another 8.2% suspected that they had the diagnosis; 3.1% had been diagnosed with obsessive-compulsive disorder, and another 14.9% suspected that they had the condition.

In the screen for other specific phobias using questions derived from the DSM-5 criteria, 41.5% of respondents reported a fear of animals (e.g., spiders, insects or dogs),

31.3% reported a fear of the natural environment, 24.1% a fear of blood, injections, or injury, 37.9% a fear of certain situations (e.g., airplanes, elevators, or enclosed spaces), and 24.1% reported a fear of other specific things, excluding clusters of holes. Overall, 14.4% of the above respondents fulfilled all DSM-5 criteria for other specific phobias, and 30.3% fulfilled all the DSM-5 criteria for other specific phobias, with the exception of the distress and impairment clinical criterion.

When screened for symptoms of obsessive-compulsive disorder (not related to trypophobia) using the ZF-OCS, 33.3% of participants reported that they washed and cleaned a lot, 39.5% reported that they frequently checked things, 34.4% reported that they experienced bothersome recurrent thoughts, 28.2% reported that their daily activities took a long time to finish, and 40% were concerned about orderliness and symmetry.

Impairment

Regarding psychological distress, 18.7% of respondents reported a low level, 30.8% reported a moderate level, 25.8% a high level, and 24.7% a very high level of psychological distress on the K10.

Regarding disability, 15.4% of respondents scored 5 or higher on the work or schoolwork subscale of the SDS; 13.3% scored 5 or higher on the social life or leisure activities subscale, and 15.9% scored 5 or higher on the family life or home responsibilities subscale. When asked how many days during the last week trypophobic symptoms had caused them to miss school or work, or made them unable to carry out their normal daily responsibilities, 4.1% of respondents reported missing 1 day, 1.5% of respondents reported missing 2 days, 1.5% reported missing 3 days, and 0.5% reported missing 4 days.

When asked how many days during the last week they felt so impaired by trypophobia that, despite attending school or work, their productivity was reduced, 7.7% of participants reported 1 day, 5.1% reported 2 days, 3.1% reported 3 days, 0.5% reported 4 days, 2.1% reported 5 days, 0.5% reported 6 days, and 2.1% reported 7 days.

Treatment history

The majority of respondents (89.2%) had never received or sought treatment for trypophobia. Of the remaining 10.8%, 2.6% received medication alone, 2.6% received cognitive-behavioral therapy alone, 2.6% received other therapy, and 3% received a combination of medication and therapy. About 50% found of participants who did receive treatment found it to be helpful.

With regards to self-help, 50.3% of respondents spent less than 1 hour per week and 24.1% spent more than 1 hour per week, on an online support group for trypophobia. Just under half of respondents (49.8%) found the online support group helpful in alleviating symptoms of trypophobia.

Resemblance to specific phobia or obsessive-compulsive disorder

In 29.7% of participants, trypophobic symptoms fulfilled all the DSM-5 criteria for specific phobia, while 51.8% fulfilled all the DSM-5 criteria for specific phobia except for the distress or impairment clinical criterion. Conversely, only 2% of participants fulfilled all the DSM-5 criteria for obsessive-compulsive disorder (with obsessions related to trypophobia), while 3.6% fulfilled the DSM-5 criteria for obsessive-compulsive disorder with exception of the distress or impairment clinical criterion.

Fear versus disgust

The majority of respondents (60.5%) reported mostly disgust when confronted with clusters of holes, while 11.8% reported only disgust; 5.1% reported mostly fear, while 1% experienced only fear; and 21% of respondents experienced the same amount of fear and disgust.

Among participants who experienced both dizziness and nausea, 92.2% were in the predominantly disgust group and 7.8% in the predominantly fear group, while among those who experienced goosebumps, 92.1% were in the predominantly disgust group and 7.9% in the predominantly fear group.

Nearly all participants (91.7% of males and 92.1% of females) experienced predominantly disgust, while only 8.3% of males and 7.9% of females experienced predominantly fear in relation to their trypophobia. In the group reporting predominantly fear in relation to their trypophobia, 2.0% experienced mild anxiety, 2.0% experienced moderate anxiety, 1.3% experienced severe anxiety without panic attacks, and 2.0% experienced severe anxiety with panic attacks. In the group reporting predominantly disgust in relation to their trypophobia, 25.5% experienced mild anxiety, 27.5% moderate anxiety, 14.4% severe anxiety without panic attacks, and 7.8% severe anxiety with panic attacks.

Despite this difference in severity of anxiety symptoms between the groups, the difference in mean duration of symptoms among the predominantly fear vs. the predominantly disgust groups was not statistically significant (t = -0.3, p = 0.7). There was no statistically significant difference between the predominantly fear and predominantly disgust group when comparing hours per week spent thinking or worrying about clusters of holes (t = -0.5, p = 0.6). Finally, the degree of impairment did not differ significantly between the group experiencing predominantly fear and the group experiencing predominantly disgust.

Among participants who experienced predominantly fear in relation to their trypophobia, 100.0% fulfilled the DSM-5 criteria for obsessive-compulsive disorder, while 66.6% also fulfilled the DSM-5 criteria for specific phobia. In the group with predominantly disgust in relation to their trypophobia, 70% fulfilled the DSM-5 criteria for obsessive-compulsive disorder, and 46.0% fulfilled the DSM-5 criteria for specific phobia. As one might derive from these figures, a number of individuals meet the DSM-5 criteria for both obsessive-compulsive disorder and specific phobia.

Associations

There were significant associations between hours per week spent thinking or worrying about clusters of holes

and each of the SDS subscales. There were also significant associations between the extent of subjective experience of anxiety and each of the SDS subscales.

There were significant associations between the number of panic attacks experienced per month and impairment on the SDS subscales, as well as a significant association between the number of panic attacks per month and the reduction of productivity as a result of trypophobia (Spearman $r = 0.55$, $p < 0.001$). Duration of symptoms was also significantly associated with impairment on the work/school subscale of the SDS ($p = 0.024$).

Discussion

The main findings of this study were that 1) trypophobia was associated with a number of sociodemographic variables (e.g., female gender), 2) trypophobia was chronic and persistent, with a mean age of onset in the teenage years, 3) the most common comorbid psychiatric diagnoses were major depressive disorder and generalized anxiety disorder, 4) a family history of trypophobia was common, 5) trypophobia was associated with substantial psychological distress and impairment, with significant associations between symptom severity/duration and levels of impairment, 6) the majority of individuals had never sought treatment, but internet support was experienced as helpful, and 7) even though individuals with trypophobia more commonly experienced disgust compared to fear in response to clusters of holes, a significantly larger percentage of individuals fulfilled the DSM-5 criteria for specific phobia compared to obsessive-compulsive disorder, and individuals with trypophobia more commonly experienced disgust compared to fear in response to clusters of holes.

The sociodemographic data suggest that individuals with trypophobia are predominantly female. This is consistent with previous work on gender differences in specific phobia. The mean age of participating individuals was 36.4 years, and the majority of individuals in this survey were well-educated and employed.

Symptoms related to trypophobia were chronic and persistent, and most respondents denied having even brief periods of remission of symptoms. The mean age at onset was 17.5 years. These findings are consistent with the onset, course, and duration of a number of specific phobias.

The majority of individuals with trypophobia (85.6%) reported a degree of anxiety, although this ranged from mild anxiety to severe anxiety with panic attacks. Anxiety was more frequent and severe in the group with predominantly disgust in relation to their trypophobia (75.2%) than in the group which experienced predominantly fear in relation to their trypophobia (7.3%).

With regards to comorbid psychopathology, 19% of respondents had been diagnosed with major depressive disorder, 17.4% with generalized anxiety disorder, 6.2% with panic disorder, and 8.2% with social anxiety disorder. Given the relatively high rates of comorbid psychiatric diagnoses, it is key to screen all patients presenting with trypophobia for comorbid mood and anxiety symptoms. The relatively low rate of comorbid social anxiety disorder is notable, given work hypothesizing that social anxiety may be due to human face clusters having the visual quality of trypophobic imagery.[12] In terms of understanding susceptibility to trypophobia, it is notable that prior aversive experiences were uncommon, while family history of trypophobia was relatively common.

Trypophobia was associated with a great deal of psychological distress and impairment, and affected work, social life, and home life. On the K10 psychological distress scale, 81.3% of respondents reported levels of psychological distress ranging from mild to severe. These findings reinforce the notion that trypophobia is a clinically significant phenomenon associated with substantial morbidity, and warrants clinical attention. Duration and severity of symptoms related to trypophobia was significantly associated with impairment.

Despite the great degree of psychological distress and impairment experienced as a result of trypophobia, the majority of individuals (89.2%) had never sought treatment specifically for trypophobia. Of those who did receive treatment, 50% found it to be helpful.

Online support groups appeared to play an important role for many members. For those with rare symptomatology that is not yet officially recognized in the scientific literature, the anonymity of the internet may present a particularly useful opportunity to openly discuss information and provide support to others struggling with the same symptoms. Almost half of all respondents found an online support group helpful (although, as discussed below, this figure may not be representative).

A significantly larger percentage of individuals fulfilled the DSM-5 criteria for specific phobia than for obsessive-compulsive disorder. Arguably, there is sufficient data to suggest that trypophobia should be classified as a specific phobia under DSM-5. It is notable, however, that the majority of participants experienced symptoms even when not directly confronted with clusters of holes (for example, they worried about coming into contact with clusters of holes).

The majority of individuals experienced disgust rather than fear when confronted with clusters of holes. While disgust has been associated with obsessive-compulsive disorder, it has also been described in specific phobia.[13]

This study has a number of important limitations. Our findings were based on a survey in a convenience sample consisting of a mixed group of individuals with self-reported fear of clusters of holes, and may not extrapolate to other populations. A homogeneous sample of individuals with trypophobia has yet to be studied systematically in a clinical setting. The demographic characteristics of this survey may simply reflect the demographics of those who participate in internet research. The low response rate further diminishes confidence in the findings. That said, the recruitment method used is also a strength of the study, as it has been argued that the internet holds promise as a way to recruit more, rather than less, representative samples (Reips, 2000).

Taken together, our findings highlight the clinical significance of trypophobia, a hitherto relatively understudied phenomenon. Trypophobia appears to be associated with significant morbidity and comorbidity, and warrants clinical and research attention. The data presented herein

suggest the need for a thorough clinical study, ideally with a longitudinal design, to shed further light on diagnostic classification, clinical features, and treatment.

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Disclosure

The authors report no conflicts of interest.

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