



Comprehensive Review of Pseudocyesis and its Associated Psychiatric Disorders

Gibson O Anugwom^{1*}, Tajudeen Basiru², Adeolu Funso Oladunjoye¹, Olubunmi Oladunjoye³, Chioma O Enyi¹, Okelue Edwards Okobi⁴, Jackie Njoya⁵, Sochima Ochije⁶, Sakshi Prasad⁷, Crystal Obi-Azuike⁸, Alexandra Urhi⁹, Joseph Ikekwere^{10,11}

Abstract

Background: Pseudocyesis or pseudocyesis vera also known as “phantom pregnancy” was previously described according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as a false belief of being pregnant that is associated with objective signs and reported symptoms of pregnancy. The exact etiology and management of this rare disorder is not known but certain factors have been associated with this including presence of certain psychiatric conditions.

Objective: This study aimed to provide a better understanding of the factors associated with pseudocyesis including psychiatric disorders and available treatment modalities.

Materials and Methods: A comprehensive review literature on the pseudocyesis in humans and its association with various psychiatric conditions. Available articles published until May 2022 was included. Relevant articles from Google Scholar and PubMed were reviewed.

Results: According to our review, it has been found that various social and cultural factors such as the importance of bearing a child and the association of being pregnant with womanhood have led to the manifestation of the condition. The etiology of the pseudocyesis is associated with various psychological and endocrine disturbances sometimes mediated by psychosomatic disorders.

Conclusion: Our findings revealed that schizophrenia and mood disorders such as depression or bipolar disorder are the most common psychiatric illnesses related to Pseudocyesis patients. Also contributing to this illness are psychosocial and cultural elements such as societal pressure to bear a child, child loss, and trauma experiences.

Keywords: Pseudocyesis; False pregnancy; Psychiatric conditions

Introduction

Pseudocyesis or pseudocyesis vera also known as “phantom pregnancy” was previously described according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as a false belief of being pregnant that is associated with objective signs and reported symptoms of pregnancy, which may include abdominal enlargement, reduced menstrual flow, amenorrhea, subjective sensation of fetal movement, nausea, breast engorgement and secretions, and labor pains at the expected date of delivery. It is derived from the Greek words: pseudēs=false and kyçsis=pregnancy [1].

Pseudocyesis is a rare disorder which has been reported in all races, countries, and social statuses [2]. Previous evidence suggested that most of the reported cases originated in developing countries. Reliable, specific information about pseudocyesis prevalence has not been compiled, yet almost six hundred case reports were documented globally [3,4].

Cases of pseudocyesis have been reported from the days of Hippocrates, back from 300 BC. It was reported that the Queen of England was a historical example who twice falsely believed that she was pregnant [5,6].

Previous articles describe pseudocyesis as a multifactorial disorder where neuroendocrine disorders, social, psychodynamic, and cultural issues, as well as psychiatric factors/conditions contribute to its evolution [3].

However, no definitive etiology has been found. Numerous cases have reported the presence of psychiatric conditions such as major depressive disorder, psychotic disorders, bipolar disorder, anxiety disorders, and personality disorders among patients presenting with pseudocyesis [6,7-10].

Depression has also been strongly reported to have a major role in the development of pseudocyesis development [11] suggested that pseudocyesis can also be the first manifestation of psychosis [12]. Pseudocyesis has captured the attention of both the clinical and research communities for decades. However, only few cases of pseudocyesis have been reported worldwide, with none having explored the association with psychiatric conditions.

Material and Methods

This review article was done on the available literature reporting on any psychiatric disorders and psychological factors in patients with pseudocyesis, epidemiology, etiology, and methods of treatment in humans only. Relevant articles from PubMed and Google Scholar were reviewed.

Bibliographies of identified articles were explored to identify additional relevant articles. Available case reports, case series, letter to editor and original articles published until January 2021, reporting on human subjects, were included.

The searches were identified using the keywords: Pseudocyesis, or false pregnancy and psychiatric conditions. All review articles and studies on non-human species were excluded in (Figure 1).

*Corresponding author: Gibson O. Anugwom, Menniger department of Psychiatry and Behavioral Sciences, Baylor College of Medicine, Houston, Texas; E-Mail: Anugwomgibson1@gmail.com

Received date: 10 May, 2022, Manuscript No. JWHIC-22-63324;

Accepted date: 13 May, 2022, PreQC No. JWHIC-22-63324 (PQ);

Editor assigned date: 16 May, 2022, QC No. JWHIC-22-63324;

Revised date: 26 May, 2022, Manuscript No. JWHIC-22-63324 (R);

Published date 03 June, 2022, DOI:10.4172/2325-9795.1000396

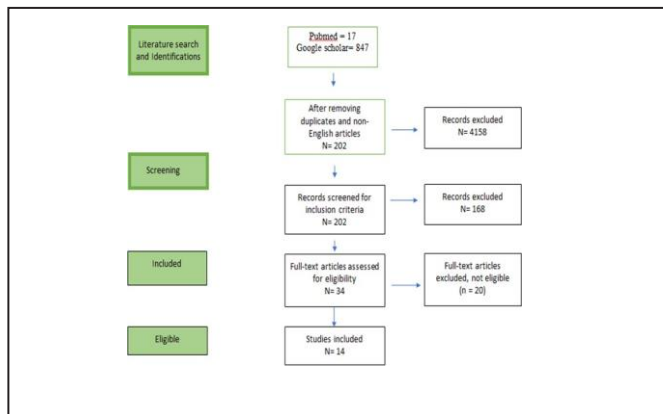


Figure 1: Prisma flowchart

Results

In this review, we found 14 eligible articles in the form of case reports, letters to editors, case series, and original research that discussed pseudocyesis in relation to psychiatric conditions. The summary findings from the case reports, letter to editor, case series are presented in Table 1. The two original studies in Table 2 included

one retrospective study of 20 patients in Brazil and one prospective study of 25 patients in Nigeria. The prospective study by Ouj reported the incidence of pseudocyesis in rural Nigeria but did not report any associated psychiatric conditions. The retrospective study by reported neuropsychiatric conditions found among pseudocyesis patients who included affective disorders (45%) and psychotic disorders (45%) [13]. The nature of the association was however not provided [14-20].

Among the 18 cases in the case reports/case series, 12 (66.7%) were diagnosed with Schizophrenia or presented with symptoms of schizophrenia. Five of the cases were diagnosed with bipolar disorder, four with major depressive disorder while two of the cases had anorexia nervosa. Folie-a-deux and Post-Traumatic Stress Disorder (PTSD) were each seen in one case respectively. In ten cases, the associated psychiatric conditions were co-occurring with pseudocyesis at the time of diagnosis while in fifteen cases, the associated psychiatric conditions were reported as past histories. In six cases, the associated psychiatric illnesses were presented as both previous histories and co-occurring at the time of presentation. In one case, the patient developed a psychiatric condition (major depressive disorder) 6 weeks after presentation with pseudocyesis. In another case, the patient was reported noncompliant with psychiatric medication (antipsychotics).

Table 1: Case reports, case series and letters to editor with various psychiatric disorders associated with Pseudocyesis.

S/N	Authors (Year)	Type of study	Associated psychiatric and psychological conditions	Nature of Association	Other information	Interventions
1.	Amit B. Nagdive et.al 2021	Case report	Intermittent auditory hallucination	Auditory hallucination and delusion (Folie-à-deux) co-occurring with signs of pregnancy	-History of multiple spontaneous abortion - Pressure from family to have a baby -Patient and her spouse had a deep desire to have a baby -Husband also claimed he could hear faint sounds/noises that he believed were coming from the baby	-Patient was managed with Quetiapine, which was titrated to 600 mg over 3 weeks, plus psychotherapy. -Patient's husband was treated with Olanzapine which was titrated to 15 mg plus psychotherapy
2	Espiridion, Eduardo D et.al 2020	Case report	Post-traumatic stress disorder and bipolar disorder	History of bipolar disorder and post-traumatic stress disorder. Co-occurring features of mania with psychosis and pseudocyesis.	- One month prior to admission, the patient discontinued her psychiatric medications, which included risperidone, oxcarbazepine, and topiramate, because she worried that they might harm her baby. - Three months history of amenorrhea prior to presentation. - Obesity (body mass index: 35.45) - Hormone levels, including prolactin (PRL), follicular stimulating hormone (FSH), and luteinizing hormone (LH) were within normal limits.	The patient was given olanzapine for her agitation and was subsequently stabilized with haloperidol and lorazepam. She was restarted on her home medications, including risperidone, oxcarbazepine, and topiramate for her bipolar disorder and propranolol for her migraine.

3	Shweta Mittal et.al 2017	Letter to editor	- Depression - Prior suicide attempt	Prior history of depression and suicide attempt. Co-occurring depressive episode.	-Tearful and confused on presentation with mixed emotions as she did not wish to be pregnant. - 6 months history of amenorrhea - No information provided for hormone levels.	Sertraline was started and the home treatment team provided daily visits and gently challenged her thought process.
4	Sandeep Grover et.al 2013	Case Report	- Psychotic Disorder - Moderate depressive episode	Co-occurring features pseudocyesis and initiation of antipsychotics for treatment of her psychotic disorder.	-Initial symptoms of Acute and Transient Psychotic Disorder 2 months after the death of her son (treated with risperidone, switched to olanzapine, and then switched to trifluoperazine and ECT). Moderate depressive episode after stopping ECT (treated with sertraline). Trifluoperazine was switched to quetiapine due to amenorrhea and galactorrhea on examination and laboratory findings significant for increased serum prolactin levels (150 ng/ml). Significant increase in weight and waist circumference after initiating quetiapine	Symptoms resolved after she was started on clozapine and the dose was gradually titrated to 200 mg/ day, with which she achieved full remission with no further increase in body weight and waist circumference over the period of 12 weeks of therapy. Remission was also accompanied with normalization of serum prolactin levels.
5.	Tarun Yadav et.al 2012	Case study	-Delusion of persecution	Co-occurring delusion of persecution after the death of her son.	-Unknown psychiatric illness in maternal grandfather -Death of her son -Obesity -Head contrast enhanced computed tomography (CT) revealed bilateral frontoparietal atrophy -Serum prolactin, thyroid stimulating hormone (TSH) and FSH level were above the normal limits. Triiodothyronine (T3) and thyroxine (T4) were low normal.	Remission was achieved after initiating thyroxine.
6.	Habek Dubravko et.al 2010	Case Reports	Case 1- Mild mental retardation Case 2- Paranoid schizophrenia	Case 1- Prior history of mild mental retardation Case 2- Prior history of paranoid schizophrenia treated with antipsychotic	Case 1- Post menopause for 8 years -Transabdominal ultrasound study revealing a dilated, overfilled urinary bladder, before and after urination -Hyperprolactinemia (prolactin, 782.09 µmol), the levels of estradiol, progesterone, FSH, LH and TSH were within normal postmenopausal range, and β-HCG was negative -Magnetic resonance imaging (MRI) of the pituitary gland was not performed because the patient feared this mode of examination Case 2- 6 months history of amenorrhea and no prior pregnancy -Normal hormone test results except for elevated levels of LH. Negative human chorionic gonadotropin (β-HCG).	Managed with antipsychotic therapy Case 2- Psychiatric hospitalization for treatment (not specified).

7	Jeannine Del Pizzo et.al 2010	Case report	-Suicidal ideation -Bipolar disorder	History of bipolar disorder and suicidal ideation with multiple psychiatric admissions`	History of multiple foster homes, physical and sexual abuses. Pregnancy symptoms including amenorrhea, abdominal discomfort, and enlargement. PRL was slightly elevated	Lansoprazole was given for gastritis and progestin challenge to induce withdrawal bleeding.
8	Narayana Manjunatha et.al 2009	Case Report	Paranoid schizophrenia	History of schizophrenia treated with antipsychotics. Co-occurring negative symptoms of psychosis	Increased waist circumference, elevated triglyceride (TG) and low high-density lipoprotein (HDL) levels. Diagnosis of antipsychotic-induced metabolic syndrome.	Treatment with amisulpride led to remission.
9.	Waldman,A.J et.al 1992	Letter to the editor	Schizophrenia	7 years history of schizophrenia, non-compliant with medications.	History of unstable relationship with a cohabiting partner and distress over being the only female of child-bearing age in her family who did not have children	Delusion of pregnancy disappeared after thiothixene treatment.
10.	Signer, S. F., Weinstein 1992	Case series (6 cases)	1. Major depression with psychosis, 2.Bipolar disorder 3.Erotomaniac delusions, stroke, and confabulation at presentation. 4. Anorexia, bipolar disorder, schizophrenia, and cocaine abuse. 5. Psychosis and bipolar disorder. 6. Bipolar disorder	Depressed mood and hallucinations at presentation. Developed depression 6 weeks later. History of bipolar disorder. grandiose delusion and confabulation at presentation. Erotomaniac delusions, stroke, and confabulation at presentation. Previous history: Anorexia, bipolar disorder, schizophrenia, stroke, and cocaine abuse. Previous history: psychosis and bipolar disorder. Previous history: Bipolar disorder.	Childhood physical and sexual abuse. Got pregnant after a rape at the age of 17 years. Elevated PRL. Binge drinking, and substance abuse. Father was an alcoholic. CT showed infarction of right basal ganglia. None stated. Viral infection at 6-month-old that caused paralysis of the palate. Flattened affect, slow developmental milestones (learning and speech). CT showed prominent cerebral atrophy Low FSH/LH and elevated PRL.	- Treated with fluphenazine decanoate. - Treated with lithium, fluphenazine, and amitriptyline. - Mood cycles treatment with Lithium and thioridazine treated delusion. - Treated with lithium, carbamazepine, and thiothixene - Delusions disappeared with the use of neuroleptics. -Treated with Lithium, haloperidol, and clonazepam.
11.	J Taylor , A Kreeger 1987	Case report	-Anorexia nervosa -Depressive symptoms	History of anorexia nervosa, and depressive symptoms. Presented with hypomania and the first episode of pseudocyesis.	Parents separated when she was 7, overdosed on drugs, previous history of sexual abuse (raped at age 12).	Treated with haloperidol.
12.	Tom Reichnbacher et.al 1987	Case report	Schizophrenia (Psychotic delusional disorder)	History of schizophrenic disorder with narcissistic and paranoid features.	Desired to marry her 17-year-old boyfriend and have a baby, but her mother was not in agreement and was physically abusive	Thioridazine (Mellaril) was given, and she got better.

Table 2: Original research studies with various psychiatric disorders associated with Pseudocyesis

S/N	Author (year)	Study design	Study span	Study setting	Sample size	Sample characteristics	Major findings
1	Ouj (2009)	Prospective cohort	4 years	Rural Southeastern Nigeria	25	Mean age: Age: 33.6 years. Range: 23-44 years. 72.7% had no formal education.	Incidence of pseudocyesis: 0.3%. 36.4% had previous miscarriage; another 36.4% had no child. Reports on psychiatric illnesses or associations were not presented.
2	Caixeta et al. (2013)	Retrospective	10 years	3 hospitals in Brazilian central region	20	Mean age: Age: 33 years. Range: 20-44 years. 44% had no children, 83% were in reproductive age. Two of the cases were males	Affective disorders and psychotic disorders were each seen among 45% of the patients. Epilepsy (5%) and Huntington disorder (5%) were other neuropsychiatric disorders found in the study.

In seven cases (38.9%), the patients were found to have hormonal imbalance affecting prolactin, Follicle Stimulating Hormone (FSH), and Thyroid Stimulating Hormone (TSH). In three cases, patients had a deep desire to have a baby, and in one case, the woman was constantly pressured by her family members to have a child. Five studies reported history of amenorrhea prior to presentation of pseudocyesis. Three cases reported history of sexual abuse and history of miscarriage while two studies reported loss of a child prior to development of pseudocyesis. Nine cases (50%) included in our analysis, reported remission of pseudocyesis symptoms after starting antipsychotics for their underlying psychiatric conditions or as a treatment for the features of pseudocyesis. In a case of a woman with prior history of depression, features of pseudocyesis resolved after initiating sertraline for treatment of the depression. One of the cases reported remission after treatment with a proton pump inhibitor for gastritis and progesterin challenge for amenorrhea. (Tables 3 and 4)

Table 3: Frequency of Psychiatric Disorders in the reviewed cases. *Each of these conditions were found in only one case.

S/N	Associated Psychiatric conditions	Frequency N (%)
1	Schizophrenia, positive symptoms of Schizophrenia	12 (66.7)
2	Bipolar disorder	5 (27.8)
3	Major Depressive Disorder	4 (22.2)
4	Anorexia Nervosa	2 (11.1)
5	Folie-a-deux, PTSD, Mental Retardation	1 (5.6)*

Table 4: Treatment options reported in the reviewed literature.

Treatment Options and management for pseudocyesis
<ul style="list-style-type: none"> • Diagnostic tests such as pregnancy tests and sonographic examinations can be done and shown to the patient to convince them about the current state of non-pregnancy. • Psychological support and psychotherapy including grounding techniques, psychodynamic and supportive psychotherapy, in multi sectoral approach-psychiatrists, gynecologists and other specialists • Counselling the patient and referring to the clinical psychologists. • Management of existing infertility. • Education of the population, including young girls.

Discussion

In this paper, we aimed to review pseudocyesis in terms of epidemiology, etiology, associated psychiatric conditions, and treatment. It should be emphasized that pseudocyesis must be differentiated from “delusion of pregnancy” (belief of being pregnant with absence of physical symptoms), “factitious disorder” (belief of being pregnant but acknowledges that she is not pregnant), and “erroneous pseudocyesis” (misinterpretation of signs suggestive of pregnancy [1,7]). Pseudocyesis is a complex and multifactorial disorder most prevalent among women, aged 20 years to 39 years [4]. However, rare cases in premenarchal and postmenopausal women have also been reported in the literature [10]. Previous studies also suggest that the cases of pseudocyesis are more prevalent in developing countries or underdeveloped countries as compared to developed nations [8,21]. The etiology of pseudocyesis remains obscure [11]. Available literature indicates that psychological deep desire for pregnancy and neuroendocrine disturbances play an important role in the development of pseudocyesis [1]. However, it is worth mentioning that, even when pseudocyesis has a psychological basis, every patient has a different disease course. Although many speculations on the etiology of this disorder have been made, the most accepted theory relates to the interaction between psychological factors and reproductive dysregulation that are caused by neuroendocrine/ endocrine disorders [3].

Previous literature review done linked pseudocyesis to neuroendocrine and/or endocrine disorders such as higher sympathetic nervous system activity, dysfunction of central nervous system catecholaminergic pathways for hormone secretion regulation and lower steroid feedback inhibition of GnRH resulting in symptoms typically found among patients with pseudocyesis [1]. Neuroendocrinological disturbances in the hypothalamic-pituitary-ovarian axis such as deficiency of dopamine, elevated prolactin, adrenocorticotropic hormone, and cortisol levels are also biological factors that have been suggested to be responsible for the occurrence of pseudocyesis [1,9,22]. The case report by Tarun et al. in which there was remission of pseudocyesis symptoms occurred after the initiation of hormone therapy with thyroxine in a woman with elevated TSH level, is an example that demonstrates the possible association of endocrinopathies with development of pseudocyesis [23]. Some studies also considered pseudocyesis as probably due

to an antipsychotic-associated hyperprolactinemia and metabolic syndrome [8].

Psychological factors such as intense desire for pregnancy [1], psychological stress induced hyperprolactinemia [23,24], grief reaction following tubal ligation, or hysterectomy were also found to be contributing factors to pseudocyesis. Social factors such as lower socioeconomic status, limited access to healthcare [4], lack of family support [6,25], low education status [26], cultural factors such as the pressure of having a child can also affect the mental health of the patient, leading to pseudocyesis as a further complication [27].

In this review, the key findings are that schizophrenia and mood disorders (bipolar disorder and depression) are the most common psychiatric illnesses found in cases of pseudocyesis reported in the literature. This is an example of interaction between the mind and the body [15]. Various studies dating back to the early 1970s provided initial evidence on the association of pseudocyesis with psychosis [19,28]. These studies suggested that the development of pseudocyesis may be due to the dysfunction in dopamine activity associated with schizophrenia. The studies also indicated the underreporting of pseudocyesis cases with schizophrenia which may be due to the consideration of the disease as delusions in the patients [3]. However, as seen in the result of this review, various psychiatric disorders are associated with pseudocyesis, suggesting a wide variation in the pattern of association of different psychiatric conditions with pseudocyesis. For instance, some patients were reported to have histories of underlying psychiatric disorders prior to presentation of pseudocyesis, while others developed pseudocyesis simultaneously with various psychiatric disorders particularly psychotic and mood disorders. Some reported pseudocyesis after discontinuation of antipsychotics while others reported pseudocyesis after initiation of antipsychotics [7,10]. These contrasting findings suggest that a direct link between a particular psychiatric disorder and psychiatric medication cannot be made without further evidence. However, it is important to note some studies such as that by Sandeep et. al reported remission of pseudocyesis with normalization of serum prolactin level.

Social factors and traumatic experiences such as cultural pressure of pregnancy in reproductive age group, disturbed family, loss of a child, history of repetitive miscarriages, sexual abuse have been reported in most of the cases review in this study [26]. Sometimes adverse factors such as abusive partners, infertility, recent miscarriage led to distress and depression which has been found to be common among patients with pseudocyesis [3,4,7,18]. These case reports appear to indicate that social factors such as lower socio-economic class may be related to the manifestation of pseudocyesis. It has been evident from the available literature and case reports that pseudocyesis patients sometimes have a strong desire of having a child or are under pressure of having a child, while some of the patients had histories of child loss or miscarriages. However, contrary to the association of desire to have a child reported by [14], described a case of a patient with a prior history of depression, who presented with mixed emotions and tears because she did not want to have a child [15].

Given the foregoing, it can be safely implied that the management of pseudocyesis will be most effective with a combination of psychosocial and pharmacotherapy as suggested in Table 4. The treatment of pseudocyesis depends on the underlying associated conditions. In most of the case reports in this review, a multidimensional approach including psychotherapy, pharmacotherapy like antidepressants, hormonal therapy such as replacement therapy have been suggested

as a promising therapeutic option. Examples can be seen in the case of a woman presenting with features of pseudocyesis, who was successfully treated with lansoprazole for gastritis and progesterin to induce withdrawal bleeding. In many other studies, psychological disorders have been closely associated with pseudocyesis. In such cases, psychotherapy such as cognitive, behavioral, and psychoanalytic psychotherapy has been suggested as an important and beneficial treatment along with consideration of pharmacotherapy for associated co-morbidities in the patient [3,7]. These findings suggest that treatment involving a multidisciplinary approach likely provides a successful outcome [15]. Therefore, we can imply that the treatment for pseudocyesis is a combined approach where the aim is to help the patients recognize the condition and to counsel them regarding the condition.

Limitations

Despite the strength of this study, the nature of the study as a comprehensive review of available literature on pseudocyesis presents some inherent limitations. First, we could not establish the exact nature of association between pseudocyesis, and other psychiatric conditions based on our findings. We could not also conclude if there was an association between antipsychotics with the development of pseudocyesis. Therefore, further studies with larger patient samples are required to better evaluate these relationships. Another limitation is the fact that the bulk of the literature included in this study were case reports/case series, the assertions made by this study are not conclusive as case reports have their limitations such as selection bias, lack of control, difficulties in comparing cases and generalizing findings [29].

Conclusion

Pseudocyesis is an intriguing condition. Despite the availability of literature on the disorder for many years, the search for the association with various factors and the etiology of conditions continues. Schizophrenia and mood disorders such as depression and bipolar disorder are the most common psychiatric conditions in patients with pseudocyesis. Psychosocial and cultural factors such as the importance of bearing a child, loss of a child, and trauma events also play a role in this condition. Though occur worldwide, it is more prevalent in underdeveloped/developing countries. Treatment entails a multidisciplinary approach including a team of gynecologists, psychologists, psychiatrists, and other professionals depending on the presentation.

References

1. Tarín JJ, Hermenegildo C, García-Pérez MA, Cano A (2013) Endocrinology and physiology of pseudocyesis. *Reprod Biol Endocrinol* 11: 37-39.
2. <https://www.psychiatry.org/psychiatrists/practice/dsm>
3. Azizi M, Elyasi F (2017) Biopsychosocial view to pseudocyesis: A narrative review. *Int J Reprod Biomed* 15: 535-542.
4. <https://www.uptodate.com/contents/pseudocyesis>
5. Sultana K, Nazneen R, Ara I (2013) Pseudocyesis: A case report on false pregnancy. *J Dhaka Med Coll* 21: 235-237.
6. Del Pizzo J, Posey-Bahar L, Jimenez R (2011) Pseudocyesis in a teenager with bipolar disorder. *Clin Pediatr (Phila)* 50: 169-171.
7. Espiridon ED, Fleckenstein C, Boyle P, Oladunjoye AO (2020) A rare case of pseudocyesis in a patient with bipolar disorder. *Cureus* 12: e10352.
8. Grover S, Sharma A, Ghormode D, Rajpal N (2013) Pseudocyesis: A complication of antipsychotic-induced increased prolactin levels and weight

- gain. *J Pharmacol Pharmacother* 4: 214-216.
9. Manjunatha N, Saddichha S (2009) Delusion of pregnancy associated with antipsychotic induced metabolic syndrome. *World J Biol Psychiatry* 2009, 10: 669-670.
 10. Dubravko H (2010) Pseudocyesis in peri- and postmenopausal women. *Open Medicine* 5: 372-374.
 11. Makhal M (2013) Psychodynamic and socio-cultural perspective of pseudocyesis in a non-infertile indian woman: A case report 22: 1-5.,
 12. Elvira K (2002) Pseudocyesis and couvade syndrome. 11: 1031-1047.
 13. Caixeta L, Brasil R, Vargas C, Taveira D, Caixeta M, et al. (2020) 1347-Pseudocyesis study in brazil. *Eur Psychiatry*, 28: 1.
 14. Nagdive AB, Bhainsora RS, Fernandes R, Behere PB, Sethi S (2021) Pseudocyesis leading to Folie-à-Deux. *J Neurosci Rural Pract* 12: 419-423.
 15. Mittal S, Lucking AN, Cunnane JG (2017) Pseudocyesis: Birth of a phantom. *Prim Care Companion CNS Disord* 19: 1-5.
 16. Yadav T, Balhara YPS, Kataria DK (2012) Pseudocyesis versus delusion of pregnancy: Differential diagnoses to be kept in mind. *Indian J Psychol Med* 34: 82-84.
 17. Waldman AJ, Marchese MJ, Greer RA (1992) Pseudocyesis in a schizophrenic woman of child-bearing age. *Psychosomatics* 33: 360-361.
 18. Signer SF, Weinstein RP, Munoz RA, Bayardo JF, Katz MR, Saben LR (1992) Pseudocyesis in organic mood disorders: Six cases. *Psychosomatics* 33: 316-323.
 19. Taylor J, Kreeger A (1987) Recurrent pseudocyesis and hypomania. *Br J Psychiatry* 151: 120-122.
 20. Reichenbacher T, Yates A (1987) Pseudocyesis as the presenting symptom in an adolescent patient with an incipient thought disorder 8: 456-459.
 21. Ibekwe PC, Achor JU (2008) Psychosocial and cultural aspects of pseudocyesis. *Indian J Psychiatry* 50: 112-116.
 22. Starkman MN, Marshall JC, La Ferla J, Kelch RP (1985) Pseudocyesis: Psychologic and neuroendocrine interrelationships. *Psychosom Med* 47: 46-57.
 23. Thippaiah SM, George V, Birur B, Pandurangi A (2018) A case of concomitant pseudocyesis and couvade syndrome variant. *Psychopharmacol Bull* 48: 29-32.
 24. Seeman MV (2014) Pseudocyesis, delusional pregnancy, and psychosis: The birth of a delusion. *World J Clin Cases* 2014, 2: 338-344.
 25. Miller WH, Maricle R (1988) Pseudocyesis: A model for cultural, psychological, and biological interplay. *J Psychosom Obstet Gynaecol* 8: 183-190.
 26. Ouj U (2009) Pseudocyesis in a rural southeast Nigerian community. *J Obstet Gynaecol Res* 35: 660-665.
 27. Kamal A, Rahman W, Laila L, Hakim N (2013) Case reports on pseudocyesis. *J Armed Forces Med Coll* 8: 56-58.
 28. Brown E, Barglow P (1971) Pseudocyesis: A paradigm for psychophysiological interactions. *Arch Gen Psychiatry* 24: 221-229.
 29. Nissen T, Wynn R (2014) The clinical case report: A review of its merits and limitations. *BMC Res Notes* 7: 264.

Author Affiliations

Top

¹Menniger Department of Psychiatry and Behavioral Sciences, Baylor College of Medicine, Houston, Texas

²Department of Developmental Behavioral Pediatrics, Dell Children's Medical Center, Austin, Texas

³Department of Internal Medicine, Baylor College of Medicine, Houston, Texas

⁴Department of Family Medicine, Lakeside Medical Center, Belle Glade, Florida

⁵Department of Public Health, Houston health department, Houston, Texas

⁶Department of Psychiatry, Emory University, Atlanta, Georgia

⁷Faculty of Medicine, National Pirogov Memorial Medical University, 21018, Vinnytsya, Ukraine

⁸University of Medicine and Health Sciences, KN, Camps, St. Kitts and Nevis

⁹Department of Mental Health, Delta State University, Delta, Nigeria

¹⁰Adjunct Clinical Instructor, University of Illinois at Chicago, Illinois

¹¹Inpatient Medical Director, Southwest Psychiatric Hospital, Georgetown, Texas

Submit your next manuscript and get advantages of SciTechnol submissions

- ❖ 80 Journals
- ❖ 21 Day rapid review process
- ❖ 3000 Editorial team
- ❖ 5 Million readers
- ❖ More than 5000 
- ❖ Quality and quick review processing through Editorial Manager System

Submit your next manuscript at • www.scitechnol.com/submission