

# RGUILD

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## Jedi-jedi: Towards A Formal Medical Classification Of A Sugar Problem In Africans

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**Objective:** “Jedi-jedi” is a very common presenting complaint in medical centers and social circles in West Africa. The symptom, constellation of symptoms or syndrome is not formally classified as a disease entity or syndrome in orthodox medical practice. Low back pain and erectile dysfunction are some of the more common presenting complaints that are qualified as Jedi-jedi. Sugar is largely implicated in the etiology of this health problem and abstaining from sugar and herbal remedies are commonly used to remedy the symptoms.

**Method:** Data were obtained from survey respondents who participated in a 2013-2014 ENDS internet survey. 298 respondent forms were used for the study. The survey was conducted online through the Survey Monkey internet survey platform. Respondents were gathered from Every Nigerian Do Something, ENDS.ng visitors and through posting on several other Nigerian internet media fora.

**Results:** Analysis showed that 80% of respondents reported having experienced Jedi-jedi. Most respondents were men and 98% were Nigerians. 56% reported low back pain as the most common presenting symptom of Jedi-jedi. Next was anal pain, 46%; bloody stool, 36% and erectile dysfunction, 35.5%. Constipation and anal itching recorded 26% and 29% respectively.

**Conclusion:** Our findings suggest that a large number of Nigerians are familiar with “Jedi-jedi” as a “disease” or as presenting symptom(s) of “disease.” Erectile dysfunction and low back pain are the most common presentations. Most respondents utilized herbal remedies for the conditions considered to be Jedi-jedi. Table sugar is the most commonly implicated factor in its etiology. We conclude that Jedi-jedi needs to be properly studied towards formal medical classification and management.

**Keywords:** sugar, sucrose, Jedi-jedi, nigeria, africa, black,

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A very common complaint and agnomen for a host of medical symptoms in West Africa, “Jedi-jedi,” remains poorly studied, classified and virtually unrecognized and defined in African and global general medical practice. There are different appellations for this condition across West Africa and other African populated Caribbean states, these include, “Diabetes” in Ivory Coast, “Pile” in Nigeria and “the running” in Ghana.

This rather common medical patient complaint and accepted local ailment is currently unrecognized and virtually unutilized in the standard health-care setting.

“Jedi-jedi,” has been associated with the following listed symptoms and medical conditions:

- Hemorrhoids
- Puritus ani
- Diarrahea
- Anal fissure
- Anal fistula
- Rectal prolapse
- Diabetes
- Lower back pain/weakness

- Erectile dysfunction

A proper review of this medical presentation and group of complaints requires investigation into the common attributed causes. Commonly implicated are:

- Consumption of sugar
- Consumption of hot pepper

In common practice, medical professionals when confronted with the Jedi-jedi complaint, determine from the patient the particular symptom experienced, which could be one or a combination of the earlier listed presentations/symptoms. The patient is then investigated and offered therapy based on the predominant presenting known symptom(s).

Not currently recognized as a medical entity, the complaint, Jedi-jedi is never investigated and treated as a disease, symptom of disease or possible syndrome of its own. There is a dearth of material on Jedi-jedi as a possible unique syndrome, symptom or disease entity.

**Complementary and Alternative Medicine (CAM)**

In contrast to the orthodox approach on Jedi-jedi, CAM practitioners in West Africa have for decades viewed Jedi-jedi as an actual disease entity and syndrome; and provided standardized remedies for its most common presenting symptoms.

Local classification: At the local level, Jedi-jedi is recognized as an important medical condition that requires its unique therapeutic remedy, which is commonly sought from CAM, usually without considering seeking professional/orthodox medical care.

Jedi-jedi is diagnosed locally based on the above listed plethora of symptoms and treated with herbal concoctions and roots usually to address some of the most disturbing symptoms, like the lower back pain/weakness and sexual dysfunction. Avoiding the perceived precipitators, usually sugar and/or pepper is also standard.

Previous studies have discussed Jedi-jedi especially in reference to childhood diarrhea. M. K. Jinadu et al's study based on 335 respondents, found participants describe that *Igbe ghuuru* (copious diarrhea) could deteriorate into Jedi-jedi if sweet foods are not avoided.<sup>1</sup>

The study also found sugar to be a major factor in the locally perceived etiology of Jedi-jedi.

Patronizers of the alternative therapeutic options are relatively satisfied with the herbal remedies offered. Unless their "Jedi-jedi," gets complicated by severe or chronic diarrhea, bloody diarrhea, hemorrhoids or Pile – inflamed hemorrhoids, do they then visit orthodox health care centers.

Local remedies given for "Jedi-jedi" include, "Burantashi," a Hausa word that literally means, "raise-the-penis," or "get it up." There are different versions of Burantashi, which may come in powder form or the bark, which is chewed. It is very commonly sold by Hausa's from the Northern regions of West African states to be ingested as a remedy for the erectile dysfunction associated with "Jedi-jedi." Burantashi contains alkaloid Yohimbe, an alpha-<sub>2</sub> antagonist with vasoconstriction effects, which explains its prescription for managing erectile dysfunction. Extracts of the bark were also found to have endothelin receptor A and B agonist effects, and released nitric oxide.<sup>2</sup>

"Agbo Jedi-jedi" is a commonly used local herbal preparation made from combinations of water extracts of leaves, bark, roots and other chemicals. Common ingredients are, bitter leaf (*Vernonia amygdalina* Delile), Sorghum (*Sorghum bicolor* Moench) leaves, Scented-leaves (*Pelargonium zonale* (L.) L'Hér.), grapefruit (*Citrus paradisi* Macfad.) juice extracts, naphthalene tablets, garlic (*Allium sativum* L.) and Camphor.<sup>3</sup>

Agbo Jedi-jedi is widely used in Nigeria; a study of 200 mothers attending a Lagos health clinic and found that 80% of them gave the concoction to their children.<sup>4</sup>

Another study that investigated the extent of use of herbal medicine in Lagos, Nigeria, gathered from 388 respondents that 67% used herbal medicine and of these, Agbo Jedi-jedi (35%) was the most frequently used herbal preparation. It must be pointed out that the usage does not translate to prevalence of perceived Jedi-jedi, as Agbo Jedi-jedi is not only administered for Jedi-jedi, and is also given sometimes as a preventive therapy.<sup>4</sup>

Other local remedies for Jedi-jedi include, "Opa-Eyin;" these are a concert of herb-laden gin drinks sold to adults on street corners and consumed to alleviate the lower back pain/weakness and erectile dysfunction associated with Jedi-jedi. Opa-Eyin is a Yoruba term that literally means, "back rod," which signifies its application as a remedy for the "lower back weakness," and erectile dysfunction or impotence associated with Jedi-jedi.

In most cases of the illness, sugar and/or spicy pepper were avoided as part of management.

There could also be psycho-social components to this ethno-medical complaint. Hence a combined medical, surgical and psychological investigation into Jedi-jedi and any global equivalents is imperative.

The importance of properly investigating this prevalent condition cannot be overstated. For simplicity in this paper, we refer to the various regional equivalents of this possible disorder, with the single "Jedi-jedi," sobriquet.

### **Etiopathogenesis**

Sucrose (cane sugar) is most commonly implicated in the perceived etiology of Jedi-jedi. As a possible etiological factor, the metabolism of dietary sucrose can be studied in three categories:

- Sucrose intolerance and osmotic diarrhea
- Effects of absorption of Sucrose breakdown products
- Increased GI Sucrose absorption and leaky gut

Sucrose, glucose and fructose are distinct carbohydrate molecules. Sucrose sugar, with molecular formula - C<sub>12</sub>H<sub>22</sub>O<sub>11</sub>, is a disaccharide, 2-Carbon sugar molecule which is broken down by enteric sucrase enzyme to glucose and fructose, two monosaccharide sugars. Sucrase acts on Sucrose sugar in the small intestine. This hydrolyzing enzyme is secreted at the tips of villi of the small intestinal epithelium. Fructose, C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> is an isomer of glucose (C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>).

### **Sucrose intolerance and osmotic diarrhea**

Congenital sucrase-isomaltase deficiency (CSID) is a disorder linked to SI and SII genetic mutations that presents with decreased ability to breakdown Sucrose and Maltose (grain) sugars. This results primarily in osmotic diarrhea<sup>5,6</sup>

The prevalence of CSID is estimated at 1 in 5,000 people of European descent and up to 1 in 20 of Alaskan and Greenland decent.

Eskimos also have a higher incidence of Sucrose intolerance, and this is becoming a rising public health concern with their increased sugar consumption.<sup>7</sup>

Recent studies have proposed quantitative disaccharide assay tests to determine the prevalence of the autosomal recessive inherited CSID, which might prove the condition to not be as rare as currently estimated.<sup>8</sup>

There is no information on disparities in sucrose tolerance between Blacks and other races/ethnicities; and more specifically, in particular relation to West Africans and other Caribbean Africans who present with the “Jedi-jedi,” complaints. West Africans have recently experienced drastic dietary changes, with significant increase in sucrose consumption.

#### **Effects of absorption of Sucrose breakdown products**

Research is increasingly focusing on the unique properties of various consumed sugars and identifying their comparative health impact. Recent studies on fructose consumption suggest that it is more harmful to humans than regular sugar with findings that high levels may increase the risk of obesity, cardiovascular disease, diabetes, and non-alcoholic fatty liver disease.<sup>9</sup>

Consumption of fructose sugar, High fructose corn syrup (HFCS) in the United States, US has jumped 1000 fold in the last two decades. The US is the leading consumer of HFCS. In Europe and Africa, cane sugar is the leading sugar in beverages and other food products. Europe, EU has a quota on high fructose syrup in place for “fair agricultural/economic development.” This EU quota was first established in 2005, and most recently amended in 2011. The quota is not based on health issues, but rather the protection of development across all EU territories.<sup>10</sup> Sucrose on the other hand has been associated with a higher post ingestion peak in levels of plasma glucose, when compared to fructose. In one study, 100 gm. glucose, fructose, and sucrose doses given to test subjects after an overnight fast produced lower plasma glucose and insulin peaks after fructose ingestion as compared with glucose and sucrose. Fructose doses resulted in lower glucagon suppression.<sup>11</sup> Several other studies have suggested that dietary fructose produces a lesser postprandial rise in plasma glucose than sucrose and glucose.<sup>12, 13, 14, 15, 16, 17</sup>

Investigation on the effects of administration of sucrose, sorbitol, and fructose (35 g) to normal and diabetic subjects, resulted in the highest mean peak increment in plasma glucose after the sucrose meals (44.0 mg/dl for normal subjects; 78.0 mg/dl for diabetic subjects) with intermediate glucose levels after fructose meals (29.0 mg/dl for normal subjects; 48.0 mg/dl for diabetic subjects).<sup>16</sup>

The differences in these two common sugar forms may explain why people who complain of “Jedi-jedi,” usually relate it to the consumption of sucrose constituted beverages and not HFCS sweetened foods.

The more favorable immediate effects when fed HFCS might also explain the propensity for such beverages and foods to be consumed to a greater degree, hence predisposing to an increased risk of obesity and other investigated sugar – related disorders, as compared to territories where sweetening is achieved with sucrose sugar which presents with more immediate consumption related discomfort and distress, hence reducing intake.

#### **Increased GI Sucrose absorption and leaky gut**

Plasma sucrose levels may also be a focus of study in the pathogenesis of Jedi-jedi. Ingested sucrose is readily cleaved to monosaccharide sugars by sucrase activity at the brush border membrane/ villi tips in the region of the upper gastroduodenal mucosa. However this depends on an intact upper GI mucosal lining. The early breakdown of sucrose has set it up for modern use as a marker in investigating NSAID related upper GI gastroduodenal epithelial damage, and tests measure sucrose in urine to detect the damage and upper GI leakage.

#### **Leaky gut syndrome and hot pepper:**

Covering over 400 sq meters, the gastrointestinal mucosa is the largest interface between the internal and external environment. The mucosal lining serves as the protective layer of this barrier. Permeability of the intestinal barrier can be a very important health determinant. “The major determinant of the rate of intestinal permeability is the opening or closure of the tight junctions between enterocytes in the paracellular space.”<sup>18</sup>

Several factors contribute to the intactness of the mucosal lining. Leaky gut syndrome, defined by an increased permeability of the gastric mucosa, is not a popular tool for predicting disease in conventional medicine, but studies have shown that a leaky gut predisposes to infections, invasion with micro-toxins and overall ill health. Integrative doctors focus more, not on the disease but on the functional dysregulations that may be behind it. Hence it is not surprising that Integrative therapy considers leaky gut in the etiology of ulcerative colitis, food intolerance, inflammatory bowel disease, rheumatoid arthritis and other autoimmune diseases.<sup>19</sup>

Alcoholic patients have been found to have altered intestinal permeability in the small bowel, which leads to micro-toxin entrance and extraintestinal damage with the common gastritis presentations.<sup>20</sup>

Large macromolecules absorbed into the body can cause inflammatory conditions, as the immune system recognizes them as foreign invaders setting up an immune defense reaction and consequent inflammation. Increased blood levels of sucrose have been attributed to hyperinsulinism as well as an increase in platelet adhesiveness.<sup>21</sup>

Cayenne pepper and other strong spices open the mucosal barrier, and have been linked to leaky gut. West Africans are known for high hot pepper consumption. There are many effects of the mucosal leakage which include proposed mechanisms relating to the development of diabetes in patients with leaky

guts, these could be by the entrance of foreign substances which irritate the intestinal immune cells or the introduction of mucosal cell proteins setting up immune reactions which affect insulin producing cells.<sup>22</sup> The relationship of Cayenne pepper with leaky gut, prompts a host of investigations on Africans who consume high doses and have complained of Jedi-jedi related symptoms.

Altomare DF et al, demonstrated in a study on hemorrhoids and hot pepper in fifty patients, that 48 hours after administering a capsule of red hot chili pepper, hemorrhoidal scores, which included itching, burning, bleeding, swelling and pain, remained unchanged in the study subjects.<sup>23</sup>

Another study in 2008, investigating the effects of chili pepper on 50 patients with anal fissures and hemorrhoids, concluded that chili pepper did increase the symptoms of acute anal fissure and reduces patient compliance.<sup>24</sup>

There could be relationship between pepper induced leaky gut and increased intestinal absorption of sucrose. It is important to study the interplay of both culprits in Jedi-jedi, Sugar and pepper, in the leaky gut syndrome in West Africans who present with Jedi-jedi.

## METHODS

### Procedures and Participants

To collect data on the perception of West Africans, most especially Nigerians to Jedi-jedi, we registered a Survey Monkey<sup>25</sup> account for simple data collection and analysis. The questionnaire had ten short questions and was distributed through online for a including the Every Nigerian Do Something, ENDS.ng platform<sup>26</sup> and other fora that had a high Nigerian readership. Responses were gathered between February 2013 and March 2014. A total of 298 provided answers to the survey. Data was analyzed and charts were created with the Survey Monkey automatic software.

### Survey Questions:

The questions asked were:

1. Have you ever had Jedi jedi/Pile?
2. What was the presentation? (please select as many as apply)
3. What do you think causes it?
4. Is there a particular type of drink sugar you noticed on the bottles that causes your Jedi jedi/Pile?
5. What do you most frequently use to treat your Pile/Jedi jedi?
6. Pick all other things you do to treat your pile/Jedi jedi
7. What name do you call Jedi jedi/pile?
8. What is your sex?
9. What is your nationality/race?
10. What's your age?

### Statistical Analysis

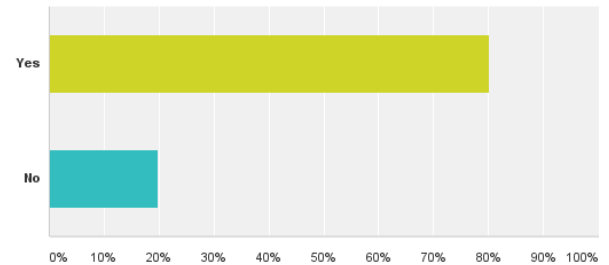
The data was gathered from a cross-sectional survey run on the independent Survey Monkey platform. All results were collected and exported as SPSS file with its corresponding data set file and responses were categorized for analysis. Statistical tests were

considered significant at  $P < 0.05$ . All analyses were performed using SPSS 18.0.

## RESULTS

### Q1 Have you ever had Jedi jedi/Pile?

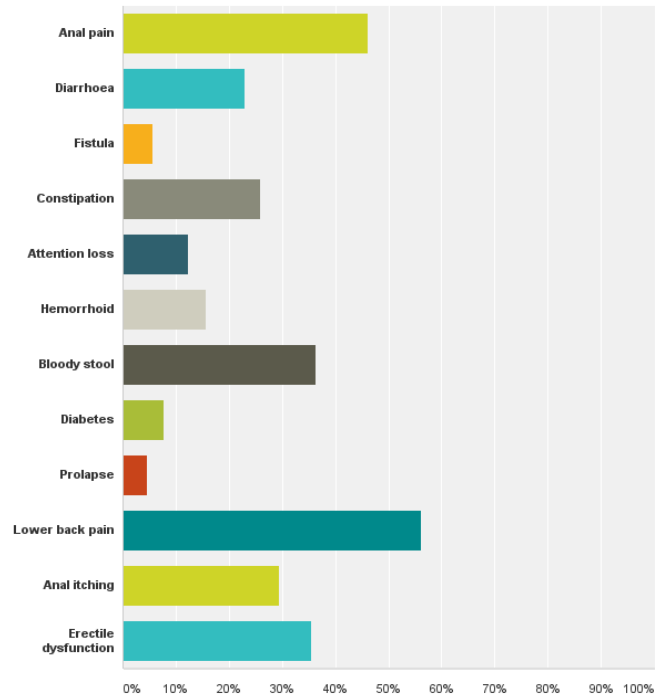
Answered: 281 Skipped: 17



Q1. Of the 298 respondents, 80% reported having experienced “Jedi-jedi.”

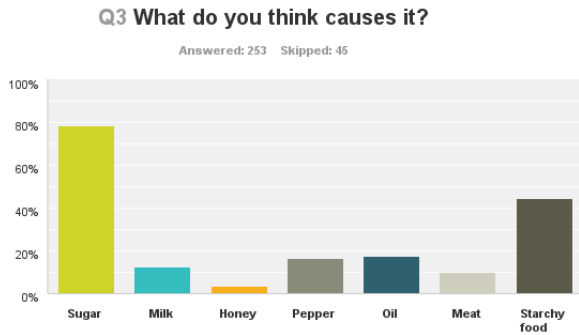
### Q2 What was the presentation? (please select as many as apply)

Answered: 262 Skipped: 36



Q2. 262 takers answered this question. Multiple selections were possible. The most common presentation was lower back pain; with 56% of respondents selecting this response, which corresponded to 141 persons. The next most common presentation was anal pain with 46% response rate or 121

respondents. 35.5% (93 people) responded with erectile dysfunction. Bloody stool was also a common presentation with 95 respondents; a 36% response rate.



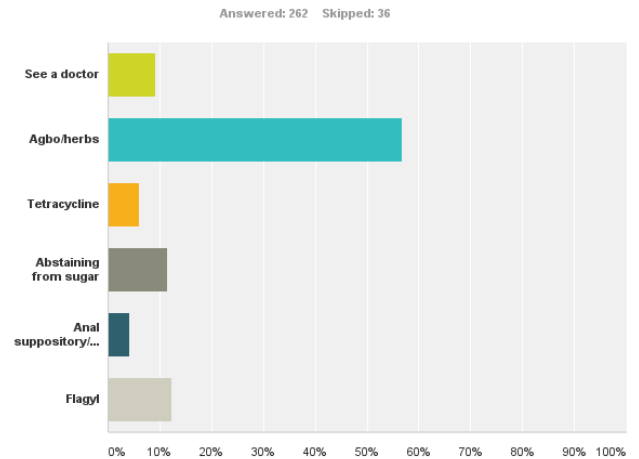
Q3. Most respondents blamed sugar in the etiology of the health problem. 199 or 79% selected Sugar as the cause. 45% blamed starchy food while 16 and 17% blamed pepper and oil respectively.

**Q4 Is there a particular type of drink sugar you noticed on the bottles that causes your Jedi jedi/Pile?**



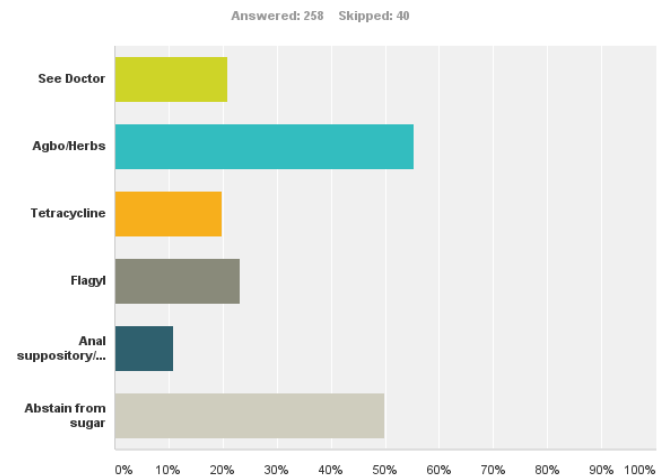
Q4. Most respondents had not paid attention or had no idea the exact type of sugar on the label of the foods and beverages they attributed to the triggering of Jedi-jedi episodes. 194 had “no idea.” Of those who knew, 57 chose sucrose and 14 chose fructose sugar.

**Q5 What do you most frequently use to treat your Pile/Jedi jedi?**



Q5. Most respondents, 149, or 57% used herbs concoctions, “Agbo” to treat their symptoms. Less than 10% visited an orthodox physician.

**Q6 Pick all other things you do to treat your pile/Jedi jedi**

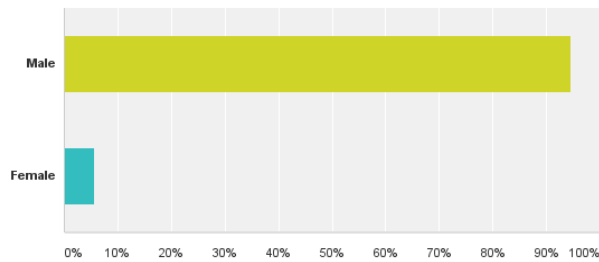


Q6. 55% reported using Agbo/herbs to remedy their symptoms. 50% of respondents reported “abstaining from sugar” as their method of treating their condition.

Q7. The question was: what name do you call Jedi-jedi/Pile? 209 respondents typed in the name they use to refer to this health problem. Most called it “Jedi-jedi.” The other responses were: Stooling, Idakole, Inu rirun/Jedi, Basir(4 respondents), Ajase Poki Poki, Dan Kanoma, Basir/Rana, Diabetes, Somokunrin dode loju obo, Anal pushout, Apa afo, ntara kwu kwu, Atini, Tumo obi, Efor Onunu, Tapa.

**Q8 What is your sex?**

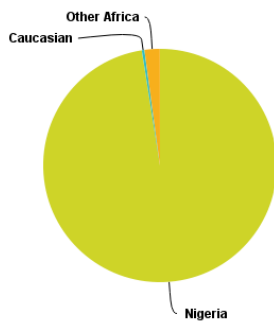
Answered: 281 Skipped: 17



Q8. 266 survey takers responded as being males and only 16 as females.

**Q9 What is your nationality/race?**

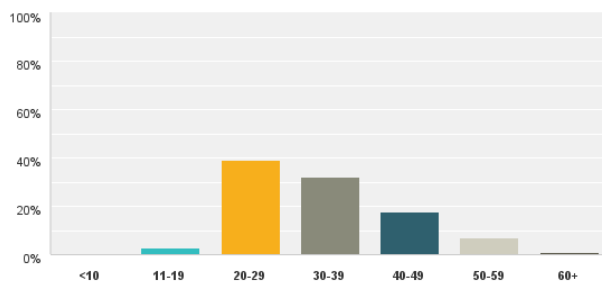
Answered: 282 Skipped: 16



Q9. 98% or 275 selected Nigeria, 6 selected “other Africa.”

**Q10 what's your age?**

Answered: 279 Skipped: 19



Q10. Most (198) respondents were in the 20-39 age bracket. 49 were age 40-49.

**DISCUSSION**

There is a dearth of scientific information or evidence of prior scientific study and elaborate research into the constellation of symptoms that make up the “Jedi-jedi” rather

common health care presentation in West Africa. Is Jedi-jedi a unique medical disorder, a symptom or a syndrome? Is Jedi-jedi related to sugar – sucrose in particular – intake? Is the condition unique to Blacks? These are some of the questions this paper tried to highlight.

Our study attempted to prove the prevalence of this unique medical presentation and social health complaint. We were able to determine that there is a very high report of this condition, with most respondents acknowledging being affected by it (Jedi-jedi). Our survey results also presented that most Nigerians (the most numerous respondents) who were affected by this condition did not seek orthodox medical help for the condition, but relied on local herbal remedies and sugar abstinence.

Survey results suggested a link between sugar (sucrose) intake, low back pain, and erectile dysfunction which were part of the constellation of most common symptoms presented as Jedi-jedi. Table sugar as a predisposing factor for these presenting symptoms needs to be thoroughly investigated.

Sucrose sugar is the more commonly used factory sweetener in African and Caribbean nations whereas; America has converted to the use of HFCS sweetening. Most respondents were not sure what type of sweeteners their beverages had, but of those who knew, most noted sucrose sugar. We find sucrose sugar to be most implicated in the Jedi-jedi group of symptoms/disorder. Sugar-loading and the rate of sucrose absorption in Blacks most especially, as well as the direct effects of sugar and possible effects of osmotic diarrhea on the prostate; and possible links between levels of sucrose breakdown products and erectile dysfunction should be thoroughly investigated.

Is Jedi-jedi a syndrome or metabolic disorder? Based on our findings, we believe Jedi-jedi and its myriad of presentations and attributed presentation symptoms needs to be fully investigated towards categorizing it as a formal medical syndrome. The severity and distribution of the plethora of patient symptoms presents an important challenge to the modern medical profession which has thus far been completely neglected.

We were limited in scope of our research. Jedi-jedi must be investigated thoroughly with a multi-specialty approach: medical, psychological and surgical research into this presenting complaint(s) will properly classify or declassify this popular health complaint. Investigations into orthodox medical management of Jedi-jedi as an entity will be invaluable once the “disorder” is properly investigated and classified.

The study did not query the overall patronage of orthodox health centers for all other ailments, which will be necessary to evaluate the full significance of the finding of a 90% reliance on herbal remedies and non patronage of orthodox health care centers for “Jedi-jedi” in particular as reported.

Future studies should investigate the direct relationship of sugar intake with presenting symptoms and evaluate possible ethnic and racial determinates of the “disease/syndrome.”

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## SUBMISSION AND CORRESPONDENCE

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