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The Incidence of Sick Building Syndrome among Bank Workers in Enugu Urban, Nigeria

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Abstract: This study explored the phenomenon of Sick Building Syndrome (SBS), which is believed to cause adverse effects on occupants of specific buildings, which are often misunderstood in Nigeria. Though, literature shows that incidence of SBS has been recognized many years ago in many parts of world. The aim of the study was to examine the incidence of Sick Building Syndrome among bank workers in Enugu, Nigeria. The method adopted was the survey approach through the use of structured questionnaire and personal interviews on sample of 332 representing 20.9 % of the population of 1, 582 occupiers of 16 banks buildings operating in Enugu urban through purposive and random sampling technique. The result of the study showed that there is up to 62.7% prevalence rate of sick building syndrome among bank workers in Enugu Urban. These incidences are sources of discomfort among the workers as result of long period they spent in the building during work period. The symptoms complained among bank workers include: headache, sneezing and irrigative symptoms (Eye, nose irritation) as a result of prolonged period of time spent in building where there is poor ventilation and frequent use of equipment that produces radiation. The study suggests that there should be synergy among those that design, construct and maintain buildings toprovide functional buildings that have good ventilation, uncontaminated materials that would reduce the incidence of SBS among its users.

Key words: Sick Building syndrome · Workers · Incidence

INTRODUCTION

Buildings are essential part of human existence, regarded as life supporting machine and rank second to food as people and buildings are inseparable. Buildings provide safety, protect the occupants from effects of weather and give internal comfort [1]. A building is an essential modifier of micro climate [2]. Akinsola and Ojewola [3] have argued that the existence of building structure is a basic necessity in every society, that their presence in most cases determines the level of growth and development in any society. WHO [4] maintained that housing is an environment which includes in addition to the physical structure that man uses for shelter, all necessary services, facilities, equipment and devices needed or desired for the physically, health and social wellbeing of the family. Akinsola and Ojewola [3] believe that housing condition plays a major role in individual health and also in environmental health as a wide variety of housing features may influence the physical, social and the mental wellbeing of occupants.Safety in buildings today can no longer be taken for granted nor considered purely from the point of view of preventing effects of weather, building collapse and other structural failures but must now cover wider issues of prevention of dwellers from issues such as home accident, hazards and sickness. This is because there are several microorganisms that are invading our home and workplace as they find these environments more and more conducivefor their growth and multiplication.

However, in spite of the significant importance of buildings to mankind today, it has been observed that people living or working in some buildings are becoming ill, especially in modern buildings with closed mechanically ventilated systems. The emerging effects of climate change have worsened building discomfort. In this regard, measures taken to control domestic cooling and emissions of industrial smoke and car exhaust fumes; outdoor pollution in the majortowns and cities has even worsened the situation. However, the problem of indoor air quality is becoming a matter of concern. Most town-dwellers spend less than an hour a day in

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the outside environment; the rest of the time they are at home, at work or in some mode of transportation. The use of synthetic materials which emit various chemical substances has led to an increase in the concentration of indoor pollutants; these pollutants in turn negatively affect the occupants of the given building thereby causing health disorder.

Sick building syndrome, though not widely known, is a worldwide problem. Almost everyone occasionally feels unwell because they are suffering from one or more common symptoms of discomfort such as headaches, dry throat or sore eyes. But there are occasions when, for no obvious reasons, people working in particular buildings experience these sorts of symptoms more often than is usual. The symptoms tend to increase in severity with time spent in the building and improve over time or disappear when away from the building. Most previous studies are centered in Europe and developed counties such as the one conducted by WHO [4] in Taiwan [5, 6] in United State and in Canada [7].

They explored the phenomenon of Sick Building Syndrome (SBS), which is believed to cause adverse effects on occupants of specific buildings, which are often misunderstood in Nigeria. Though, literature shows that incidence of SBS has been recognized many years ago in many parts of world. It is apparent that no known study of Sick Building Syndrome has been conducted in Nigeria, let alone Enugu urban. However, the study does not seek to investigate the related SBS symptoms' mechanisms of office workers. It seeks to investigate the prevalence or incidence of Sick Building Syndrome among office workers in Enugu. This is important because most of the office workers spend between 85 to 90% of the time indoors both at homes and offices. This study would help to educate builder sand everyone involved with the design, construction, maintenance and occupation of office buildings of the inherent incidence of SBS. This will in turn enhance and promote efficient communication with building team to work more efficiently to prevent and solve the effects of Sick Building Syndrome.

Concept of Sick Building Syndrome (SBS): The Sick Building Syndrome (SBS) is used to describe a situation in which the occupants of a building experience acute health or discomfort-related effects that seem to be linked directly to the time spent in the building. These signs and symptoms suggest that some conditions within and outside the building caused the occupants to suffer from SBS. The major symptoms include headaches, dry eye and eye strains, drowsiness, asthma, upper respiratory infections, joint pains, swelling of the legs, pregnancy problems including miscarriage and cancer [6]. It is however experienced more often in air-conditioned buildings, which are usually used as control weather conditions especially within the tropical region. Sick building syndrome causes are frequently pinned down to flaws in the heating, ventilation and air conditioning (HVAC) system. Other causes have been attributed to contaminants produced by gassing of some type of building materials, volatile organic compound (VOC), molds, improper exhaust ventilation and light industrial chemicals used in the building. In most cases, SBS symptoms will be relieved soon after the occupants leave the particular room or zone. However, there can be lingering effects of various neurotoxins, which may not clear up when the occupant leaves the building. In some cases, particularly in sensitive individuals, there can be long-term health effects. Some building-related factors, such as high building temperature, poor ventilation, high humidity and sealed windows, in tandem with introducing conventional paints, coatings and furnishings into the space, can contribute to symptoms of Sick Building Syndrome.

In the late 1970s, it was noted that nonspecific symptoms were reported by tenants in newly constructed homes, offices and nurseries. There are several names that these nonspecific symptoms were called e.g. "office illness", Sick building, Sick building Syndrome. The term "Sick Building Syndrome" was coined by the WHO in 1986, when they also estimated that 10-30% of newly built office buildings in the Western countries had indoor air problems. [9] Suggested that allergy epidemic was caused by "Sick building". Since the 1990s there have been several studies on SBS and it was described as "ticking time bomb". However, the concept remains alive in popular culture and is used to designate the set of symptoms related to poor home or work environment engineering. "Sick building" is therefore an expression used especially in the context of workplace health [10]. Raw *et al*. [11] stated that Sick Building Syndrome has emerged as a significant problem in recent years, especially in United Kingdom.

In the temperate regions, oil crisis, energy-saving measures have led to a reduction in the ventilation of rooms. SBS originated as a result of the measures taken to conserve energy, triggered by energy crises in the 1970's [12]. The syndrome, the cause of which is probably multifactorial, is not usually accompanied by any organic lesion or physical sign and is, therefore, diagnosed by exclusion. It has been found in all the major cities of the Western world, among people who work or live for several hours a day in an artificial atmosphere.

The contentious issue about SBS is what causes the sick building syndrome? Iyagb [12] asserted that the pressing need to save energy led to an architectural resolution that was geared to seating buildings up tight. He went further and noted that buildings were designed to be energy efficient with recalculating air conditioning systems and inoperable windows. This allowed the off gassing from the construction materials to remain longer and in higher concentrations than in lesser air tight buildings. This innovation resulted in unacceptable conditions at work and even at home [13]. Joshi [14] suggested that the primary causes of SBS are chemical contaminants from indoor such as volatile organic compounds (VOC) are adhesives, upholstery, carpeting, copy machines, manufactured wood products, pesticides, cleaning agents and outdoor sources such as motor vehicle exhaust, plumbing vents and building exhaust etc. Other sources include biological contaminants include pollen, bacteria, viruses, fungus, molds; inadequate ventilations of buildings with more airtight, with less outdoor air ventilation; electronic radiations such Gadgets like microwaves, televisions and computers emit electromagnetic radiation, which ionizes the air. Joshi [14] outlined the following as the symptoms of Sick Building Syndrome; headache, dizziness, nausea, eye, nose or throat irritation, dry cough, dry or itching skin, difficulty in concentration, fatigue, sensitivity to odours, hoarseness of voice, allergies, cold, flu-like symptoms, increased incidence of asthma attacks and personality changes. The cause of the symptoms is not known. It reduces work efficiency and increases absenteeism. Most of the complainants report relief soon after leaving the building, although lingering effects of neurotoxins can occur.

Psychological factors such as excessive work stress or dissatisfaction, poor interpersonal relationships and poor communication are often seen to be associated with SBS. Poor and inappropriate lighting with absence of sunlight, bad acoustics, poor ergonomics and humidity may also contribute to SBS. USPA [15] stated that the main causes of SBS are: Inadequate ventilation, Chemical contaminants from outdoor sources, Chemical contaminants from indoor sources and Biological contaminants. The most common causes here are the indoor and outdoor air pollution.

Other remote causes are poor design concept of building in areas of illumination, ventilation, production and installation of air conditioning system, Poor and uninformed occupant activities in buildings; Use of building materials that are hazardous to occupant health; Operation and maintenance of building in manners inconsistent with their original design or prescribed operating procedure; Most neglected causes are Poor maintenance culture of building forgetting that Buildings and their surrounding environments is complex in nature. They trap and concentrate pollutants as well as generating pollutants. Many buildings are now designed to reduce the intake of fresh air from outdoors because it is cheaper to re circulate air that has already been warmed in winter or cooled in summer than to take in outside air and heat or cool it repeatedly [16]. Okolie [17] argued that the increasing use of machines also adds to indoor air pollution e.g. Ozone from photocopiers, noise from printers and electromagnetic radiations from visual display units. According to EPA [17] inadequate ventilation may also occur if heating, ventilation and air conditioning system do not effectively distribute air to the occupants of a building and this is thought to be a very significant factor in SBS. As Iyagba [12] puts it, the practice of tight control over the indoor environment poses problems if the ventilation or air conditioning system is in any way imperfect. Peter [18] aimed at investigated the causes, effects and remedies of sick building syndrome. The result of the study identified that inadequate ventilation, chemical contaminates from indoor and outdoor cases, biological contaminants, contamination due to building materials, ventilation, Recirculation of air and pollutants and lack of building maintenance are some of the major causative factors of SBS.

Literature Review: Indoor Air Quality (IAQ) was firstly investigated in 1970s and continues until these days because it is a basic determinant of healthy life and people‘s well-being, comfort and productivity [19]. Bluyssen [20] Suggested that indoor air quality can be observed from both human and physical effect points of views. Muhamad-Darusa *et al*. [21] defined indoor air quality as a term referring to the air quality within and around buildings, as it relates to health and productivity of its occupant. Sulaiman and Mohamed [22] Investigated the association between SBS and indoor air pollutants in Malaysia. The results of the study indicated that CO2 has strong correlation with other indoor pollutants that cause SBS symptoms. Passarelli [23] study aimed at exploring the phenomenon of SBS, which he believed to cause adverse effects in occupants of specific buildings. The study indicates that the contributors to SBS included poor indoor air quality, excessive background noise, emissions from certain synthetic building and furnishing materials, inappropriate temperatures and airborne pollution. [23] investigated whether sick building

syndrome (SBS) complaints among office workers were associated with the indoor air quality. This study was limited to a population of 417 employees in 87 office rooms of eight high rise building. They were of the assertion that the general population spends an average of 80%-90% of their time in indoor environment, hence, individuals tend to have SBS due to long hours spent indoors. It was further observed that building characteristics, Indoor Air Quality and indoor environmental quality have been associated with SBS having Carbondioxide (CO_2) levels as the major factor associated with SBS after a simultaneous 8-hour measurement of Carbondioxide (CO_2), temperature, humidity and Total Volatile Organic Compounds ($TVOC_S$) in each office using portable monitor. Volatile Organic Compounds (VOC_S) were noted to be common indoor air pollutants in response to both indoor and outdoor emissions which could cause irritation of the eyes, skin, respiratory tract and vice versa.. Zamani *et al*. [24] investigated the relationship between Indoor Air Quality (IAQ) and prevalence of Sick Building Syndrome (SBS) in two different offices (old and new) in Selangor. Hundred and seventy workers were selected consisting of 85 office workers for each building. Questionnaire based on Indoor Air Quality and Work Symptoms Survey, Indoor Environmental Quality Survey, was used to record prevalence of SBS. Measurement of indoor air quality was performed using instruments recommended by IAQ Code of Practice, Department of Occupational Safety and Health, Malaysia.This study suggested that when there is an increase in the ventilation rates per person in office building, it would significantly reduce prevalence of SBS. That is reduction in prevalence of SBS would depend on the increase in ventilation rates.

Dovjak and Kukec [25] in a study aimed at designing a preventive and control strategy to lower the occurrence of SBS recommended that it is a basic necessity to educate building occupants and everyone involved with the design, construction and maintenance of buildings about incidence of SBS. The conclusion of the study is approximately 30 % of new and renovated buildings worldwide were assumed to be related to SBS, in residential buildings, 12 to 30.8% of occupants were identified as having SBS symptoms, public buildings were noted to have 20 to 50% of workers experiencing SBS symptoms. The inference from the study is that, design of healthy and comfortable built environment is fundamental for the prevention and control of health hazards. For the design of healthy and energy-efficient buildings, a strategic approach for integral prevention and control of SBS is mandatory.

Fisk *et al*. [6] used data from published studies to analyze the change in SBS symptoms prevalence in office workers with ventilation rate. The result of the study indicated that, as the ventilation rate drops from 10 to 5 L/s-person, relative SBS symptom prevalence increases approximately 23% (12 to 32%) and as ventilation rate increases from 10 to 25 L/s-person, relative prevalence decreases approximately 29% (15 to 42%). The implication of this is that building features and air quality may cause SBS symptoms prevalence. Bourbeau *et al.*[8]examined the prevalence of symptoms associated with the sick building syndrome (SBS) in office workers before and six months and three years after being exposed to a building with an improved ventilation system. The result of the study has shown that there is decrease by 40 to 50% among office workers six months after they were exposed to a building with an improved ventilation system. The implication of this study is that it further supports the argument that better and improved ventilation systems reduce the prevalence of symptoms associated with the SBS. Chang *et al*. [5] investigated the prevalence of sick building syndrome (SBS)-related symptoms among hospital workers as they often time ignore their health while providing health care for others. The result of the study reveals that about 84% of the health care workers suffered from at least one SBS-related symptom, among which the most frequently reported symptom was nasal symptoms, accounting for 66%. Chemicals such as CO2, PM, VOCs tended to be significantly associated with SBS-related symptoms. There are various effects depending on the type of chemicals present and whether the working spaces are open or confined. This implies that these health concerns affecting those who provide health care to people every day cannot be ignored.

Zhang *et al.* [26]studied change of SBS in Chinese pupils in relation to parental asthma/allergy (heredity) for two-year. A total of 1993 participated at baseline and 1143 stayed in the same classrooms after two years. The prevalence of mucosal and general symptoms was 33 and 28% at baseline and increased during follow-up ($P < 0.001$). Twenty-seven percent reported at least one symptom improved when away from school. The implication of the study is there are high levels of CO2 indicating inadequate ventilation and high levels of SO2 and NO2, both indoors and outdoors. All schools had natural ventilation, only. Relying on window opening as a tool for ventilation in China is difficult because increased ventilation will decrease the level of CO2 but increase the level of NO2 and SO2 indoors. The summary is that there are studies confirm incidence of SBS, however these studies are found in developed and highly

Table 1: Population and sample of study

S/NO	Population Chaaracteristics	Staff Strength	Total Number of Questionnaire Distributed (21.8% of Staff Strength)	Total Number of Questionnaire Returned	Questionnaire Returned (%)
1.	Access Bank	155	31	30	1.9
2.	Guaranty Trust Bank	66	13	13	0.8
3.	Diamond Bank	193	38	37	2.3
4.	Fidelity Bank	44	8	8	0.5
5.	First City Monument	122	24	24	1.5
	Bank				
6.	Heritage Bank	28	5	5	0.3
7.	Keystone Bank	76	15	15	0.9
8.	Skye Bank	74	14	14	0.8
9.	Stanbic IBTC Bank	31	6	6	0.4
10.	Sterling Bank	56	11	11	0.7
11.	Union Bank	103	55	49	3.1
12.	EcoBank	55	11	11	0.7
13.	United Bank for Africa	149	29	29	1.8
14.	Unity Bank	23	4	4	0.3
15.	Zenith Bank	126	25	25	1.6
16.	First Bank	281	56	51	3.2
	Total	1,582	345	332	23.6

industrialized countries with track of indoor and outdoor pollution problems. Studies of this nature in developing countries such as Nigeria are limited. The few studies in Nigeria [12] are an inaugural lecture, Obiegbu [2] and [18] Therefore it is worthwhile to investigate whether there are incidences of SBS in Nigeria among office workers who spend up 80 to 90 % of the time indoors, typical of such workers are bank workers.

MATERIALS AND METHODS

The method adopted for this study is the survey approach using structured questionnaire which was distributed among staff members of selected banks in Enugu Urban. The total population of the study included all workers employed in 16 Banks operating in Enugu urban which amount to 1, 582 (Table 1). That is the workersoccupied buildings used for banking business in Enugu. The questionnaire administered to respondents (Bank workers) comprises of seven types of SBS: eyes (Dryness, irritation or burning), nose and throat (Dryness, runny noseand nose congestion), respiratory system (Breathlessness, wheezing), skin (Dryness, irritation, itching), fatigue, headache and difficulty concentrating. However, there are other ancillary questions that elicit SBS among the respondents. The workers were asked whether each of these symptoms has ever occurred to them or not. If so there were asked to indicate its frequencies (daily, weekly monthly or three times weekly. However, for purpose of this study, the symptom is defined to occur only at workplace.

For the purpose of this study a sample of 345 representing 21.8% of the total population was considered appropriate through purposive and random sampling technique. Therefore a total number of 345 questionnaires were administered to bank workers in Enugu urban randomly and the response rate was 96.2%. However, 332 were returned and used for analysis making a total 20.9% of the respondents. This sampling technique was adopted because of accessibility of the respondents. In analyzing the data descriptive statistical tools such as mean and mode; the frequency tables were used to show the occurrence of variablesinvestigated.

RESULTS AND DISCUSSION

The results of the study showing the occurrence of the SBS variables investigated and depict how the respondents answered the questions are presented below. The average age of the participant in the study is 35 years andthe median period spent in the office is 2 years. However, minimum time workers spent in the office isbetween 10 and11hours daily. This means that workers spend nearly half of their day in an enclosed office (Indoor). This implies that bank workers are more susceptible to indoor air pollution. This indoor air pollution could be severedue to the use of artificial and mechanical ventilation and equipment that are combustible (Table 3). As combustible material they constantly emit electromagnetic radiation which ionizes the air which in turn affects their health negatively [13].

Table 2: Equipment Found Among Banking Office Building

S/No	Responses	Frequency	Percentage
a.	Computers	66	19.9
b.	Adhesives for Carpeting and	4	1.2
	Rugs		
c.	Air- Condition	66	19.9
d.	Printers	59	17.7
e.	Photocopiers	22	6.6
f.	New wooden Furniture	45	13.6
g.	Heating systems	4	1.2
h.	Inverters	66	19.9
	Total	332	100.00

Table 3: Building Defects

S/NO	Responses	Frequency	Percentage
a.	Wall cracks	64	19.3
b.	Damp ceiling and walls	104	31.3
c.	Insect or rodent droppings	134	40.4
d.	Others (specify)	0	0.0
e.	None	30	9.0
	Total	332	100.00

Source: Field survey 2018

Table 4: Symptoms of sick building syndrome

S/NO	Responses	Frequency	Percentage
a.	Headache	202	60.8
b.	Dizziness	62	18.7
c.	Irritation (eyes, nose, throat etc.)	53	16.0
d.	Skin rashes	0	0.0
e.	Sneezing and Coughing	12	3.6
f.	Nausea and vomiting	3	0.9
g.	Fatigue	226	68.1%
	Total	332	100.00

Table 2 shows the equipment found among bank offices. Theseequipment are cleaned daily and are combustible(Smoke) due to their usage within the office. Some of the combustible equipment are generators, waste incinerators, photocopying and heating and cooling systems. Worst still, 96.1% of the respondents agreed that the doors and windows of the office premises are closed throughout the stay. This regular shutting of doors and windows and coupledwith approximate houses that run their generator sets for longer period of time further exacerbate the exposure of the occupants to outdoor and indoor chemical contaminants.

Table 3 shows that 19.3% of the respondents have noticed defects in their office buildings such as (Wall cracks, damp ceiling and walls, insect or rodent) within the office building. Specifically, 31.3% of the respondents have noticed damp ceilings and walls within the office building, 40.4 % of the respondents have noticed insect or rodent droppings within the office building, while 9.0% did not noticed any of the above. This means that majority of the respondents have been exposed to insect or rodent droppings, damp ceilings and walls, stand the chance of biological contamination such as mildew which could breed on damp surfaces and causes air pollution.

Table 4 shows that 60.8% of the respondents have the symptoms of headache, 18.7% dizziness, 16.0% irritation, 3.6% sneezing and coughing , while 0.9% nausea and vomiting during and after work hours. This means that there is an incidence of sick building syndrome within the banking offices. In order to find out whether the staff feel that they are working in a conducive working environment? However60.5% of the respondents believe that the working place is very conducive relative to the nature of their work, while 39.5% of the respondents' working place is not conducive relative to the nature of their work.This means that majority of the respondents' workplace is very conducive relative to the nature of their work hence a positive contributive factor. Generally, the conduciveness of a location or place has a positive implication on work output. The pertinent question is why do they have the symptom of sickness? In deed 62.7% are of the viewthat these symptoms do have negative effects on their work output. This shows that a SBS have direct relationship between negative health situations and bank worker output or productivity. That is to say the occurrence of these health challenges is directly related to long work hours rather than hereditary. To test the hereditary, or whether workers have allergy reactions, 98.5% of the respondents report that they do not have any of the mentioned health challenge as a genetic health challenge while 1.5% is not sure if mentioned health challenges are hereditary. This result further shows that there is no relationship between these health challenges and genetic factors, indicating there remote causes of these symptoms are building related, which confirm incidence of SBS.

There are several building materials that aggravate sick building symptoms. Table 5 shows that 37.3% of the respondent states that the type of wall finishing obtainable in their office is emulsion paint, 23.5% oily paint, 9.0% marble paint, 3.0% wall tiles, while 27.2% text coat. It could therefore be inferred that majority of the respondents used wall paints which are included in building fabrics that cause pollution in a building which are hazardous to occupants of the building. This confirms the study carried out by Zhang *et al.* [26] on the effects of new buildings on the health challenges of occupants. Usually corporate companies repaint their buildings yearly to maintain good outlook or corporate image.

Table 5: Types of Wall Finishing in the Office Building

S/NO	Responses	Frequency	Percentage
a.	Emulsion Paint	124	37.3
b.	Oily paint	78	23.5
c.	Marble paint	30	9.0
d.	Wall tiles	10	3.0
e.	Wall papers	0	0.0
f.	Textcoat	90	27.2
	Total	332	100.00

Table 6: Economic Activities Located Near the Office Building

S/NO	Responses	Frequency	Percentage
a.	Restaurants	37	11.1
b.	Warehouse	8	2.4
c.	Workshop (timber, electrician etc.)	6	1.8
d.	Service Station (petrol station)	90	27.1
e.	Retail shops (Market)	65	19.6
f.	Others (specify), transport services	126	38.0
	Total	332	100.00

Table 6 shows that 11.1% of the respondents state that restaurants are located near the office building, 2.4%, 1.8% workshop, 27.1% fuel service station, 19.6% markets and 38.0% transportation services. These economic activities besides being positive contributions to the sitting of banking business in the area also have negative effects within the environment such as the retail shops and transportation services (Motor vehicles, generators etc.) are associated with emission of chemical contaminants which are detrimental to the health immediate residents.

CONCLUSIONS

The paper concludes that sick building syndrome is used to describe situations in which occupants of buildings experience acute health and discomfort effects that appear to emanate from the building. Some of the causative factors of Sick Building Syndrome include chemical contaminants (e.g. fumes from motor vehicle exhaust, combustion byproducts), biological contaminants (e.g. pollen, bacteria, molds that can breed in stagnant water that has accumulated in ceilings, walls carpets etc.), inadequate ventilation, electromagnetic radiation and psychological factors (Excessive work stress, poor interpersonal relationship) etc. However, the resultant symptoms of SBS include; headaches, dry eye and eye strain, sore throat, drowsiness, irritation, skin rashes, sneezing and coughing etc. However, non-specific symptoms of tiredness, difficulty to concentrate and dizziness are moderately associated with the difference of carbondioxide levels between the indoors and the outdoors. Significantly, higher prevalence of sources of discomfort and general and irrigative symptoms were observed in the population of the study (Bank workers) based on prolonged period of time spent in the building.

That majority of the banks are located along the main roadsand near to major economic activities such as restaurants, market, shopping mall etc. This further gives way to bank workers been susceptible to contaminants like pollutants from generating sets, motor vehicle exhaust, combustion byproducts which can enter the office building via diffusion. The study finds that the prevalence rate of Sick Building Syndrome among bank workers is 62.7%. The effects of Sick Building Syndrome include fatigue and difficulty in concentration during work hours as stated by 68.1% of the respondents.

In conclusion there is a need for the education and enlightenment of building occupants and everyone involved with the design, construction and maintenance of buildings to promote efficient communication with each other to work more effectively together to prevent and solve the effects of Sick Building Syndrome. However, reduction in prevalence of Sick Building Syndrome would depend on the increase in ventilation rates, ventilation effectiveness and reduction in indoor air pollutants that can cause Sick Building Syndrome. The study suggests that regular office keeping can help to eliminate residues of air pollutants mainly particulate matters either at source or at working station. Prompt clean-up of spills, regular and thorough cleaning of all areas of the office will be essential to maintain healthy indoor air and reduce the incidence of Sick building syndrome.

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