



TWIST

Journal homepage: [www.twistjournal.net](http://www.twistjournal.net)

# The Effects of Stress, Age and Gender on Immunity and Health among Secondary School Teachers in Ekiti- State

**Ajewole I. C. C.\***

College of Health Sciences, Public Health Department,  
Joseph Ayo Babalola University, Ikeji-Arakeji, Osun-State, Nigeria  
[\*Corresponding author]

**Babalola S. A.**

College of Medicine and Public Health, Department of Community Medicine,  
Afe Babalola University, Ado-Ekiti, Nigeria

**Prof. Agbana R. D.**

College of Medicine and Public Health, Department of Community Medicine,  
Afe Babalola University, Ado-Ekiti, Nigeria

**Ogunrinde M. E.**

School of Community and Public Health,  
College of Health Sciences and Technology, Ijero-Ekiti, Nigeria

## Abstract

This study investigated the effect of stress, age and gender on immunity and health. The objectives were the views of the target population about their health, how identified factors affected immunity and health, how immunity functions and recommend the best ways of improving good health. The results from the research finding showed that 59% of the teachers claimed that stress affected their health and immunity, 62% admitted that their age have effects on their health and immunity, 57% revealed that gender affects their health and 70% admitted that hormonal effects has an impact on their immunity and health. I found out strong relationship that stress, age and hormones affects teacher's health and immunity, a larger percentage of the population admitted that those factors actually affected them. On the basis of the findings, it is recommended that infrastructures that alleviate stress should be provided in the schools. Teachers should be recruited on constant basis, so as to reduce the work load and reduce teacher's stress Finally school health program should be provided and funded for the benefits of both teachers and students.

## Keywords

Age, Stress, Immunity, Health

## INTRODUCTION

Immunity is an intrinsic or acquired state of resistance to an infectious agent (Medical Dictionary, 2018). In biology, immunity is the state of having sufficient biological defences to avoid infection, disease, or other unwanted biological invasion (Lindsqueter 2016). It is the capability of the body to resist harmful microbes from entering it (Lindsqueter 2016). Immunity involve both specific and non-specific component (Lindsqueter 2016). The non-specific components act either as barriers or eliminators of wide range of pathogens irrespective of antigenic specificity (Lindsqueter 2016). Health is defined by World Health organisation as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (World Health organisation, 1988).

Both immunity and health hand in hand because once immunity of the body is faulty then the healthy state of the body will depreciate (David 2016). Immune system is designed to defend the body against millions of bacteria, microbes, viruses, toxins, parasites, cancer cells and blood or tissues from another person (Brain 2016)

There are several factors that could make the immune system and health susceptible to diseases, illness and infection. Some of the factors include stress, age, gender, hormones, among others (Manhattan 2017).

Stress refers to the adjustive demands made upon the individual to the problem in living with which one must cope, if one must meet his needs (Coleman 2015). Stress triggers the adrenal glands to release stress hormone (Cortisol) during episodes of fear and anxiety which leads to an increase in the circulating white blood cells (initially) at first (Lorraine, 2017). When cortisol remains high, however, white blood cell numbers are reduced (Lorraine, 2017). As stress continue unabated over weeks or months, output of the adrenal hormone cortisol is consistently high and white blood cells numbers remain reduced (Lorraine, 2017).

Age is the number of years that a person has lived (Oxford Dictionary, 2017). Age has been observed to have effects on immunity and health because the immune system changes throughout life (Castle, 2017). As people age, the immune system becomes less effective, it becomes less able to distinguish self from non-self (that is to identify foreign bodies) (Castle, 2017). As a result, autoimmune disorder becomes more common (Hall, 2017). The progressive increase of mean age and life expectation are correlated to a rise of chronic degenerative diseases such as cancer, cardiovascular, autoimmune or neurodegenerative diseases among the elderly population (Berghella, 2016).

Gender is the fact of being male or female (Oxford Dictionary, 2017). Gender has been observed to be related to disease susceptibility (IMM Press Magazine, 2017). Gender accounts for important differences in the incidence and prevalence of various diseases (Grossman, 2016). Gender affects all areas in human life and consequently affects the different steps of an immune response (Angele, 2017). Exposure to various types of antigens, access to health promotion programs and health care, as well as prioritization of health needs and household resource allocation, all affect the different response of females and males of immunologic challenges (Elsevier, 2 011).

## **BROAD OBJECTIVES**

Effects of stress, age, gender, and hormones on immunity and health, among secondary school teachers in Oye Local Government, Ekiti State. While the specific objectives of the study were To know the views of Secondary school Teachers about their health and immunity. To explain how identified factors affects immunity and health. To explain how the immune system functions to the teachers. To educate the teachers on ways to boost and strengthen the immune system.

## **METHODOLOGY**

**Methods:** This was an exploratory study that involved the use of a 26-item questionnaire to obtain primary data and secondary data were collected from books, journals, dictionaries and internet. The tool used to analyze data was SPSS version 23.5 while frequency tables were used for data presentation. Ethical approval was obtained from the school authority of National Open University of Nigeria, Ado Ekiti Study Centre. Written permission was gotten from the principal of the chosen school. A total number of three hundred respondents were included in the study. The process of multi stage sampling, stratified and simple random sampling techniques were used to select the respondents.

**Study area:** Oye Local Government was carved out of the defunct Ekiti North Local Government on 17<sup>th</sup> May, 1989 with the headquarters at Oye-Ekiti., Ekiti-State.

**Location and Boundaries:** The Local Government has its permanent secretariat complex situated along Ilupeju Road, OyeEkiti. It has a land area of 661.91sq.km. The Local Government is bounded by Ilejemejeto the north, Irepodun/ Ifelodun to the south, Ikole to the east and Ido/Osi to the west. It comprises of the following towns and villages: Oye, Ilupeju, Ayegbaju, Imojo, Ire, Itapa, Isan, Itaji, Ilafon, Ilemeso, Oloje, Omu, Ayede, Ijelu and Osin.

## **The People and Population**

The people of the Local Government are predominantly Yorubas of Ekiti. There are other ethnic groups such as Ebiras, Igbos, Fulani and Hausa communities. Oye Local Government has a population figure of 162,150 according to 2006 population census.

## **Tourism**

The Local Government has the following areas as tourist centre: Adabi, Hill, Isan-Ekiti, Erijin Hil, Ire-Ekiti, Agarigi Hill, Itapa-Ekiti, Esikun Hill, Ilupeju-Ekiti, Old Palace Ire-Ekiti, Obas House, Itaj Ekiti, Arata Spring, Itaji-Ekiti, Oje Stream, Itaji-Ekiti.

## **Education**

The people of the Local Government are intellecyyually sound and well read. Some of them reside at home while others are in Diaspora.

## **Occupation**

The people are predominantly farmers growing both cash and food crops. These include cocoa, cashew, kola, yam, maize, okro, etc. However, few of the people also engage in vocational services.

## Religion

The people of the Local Government practice Christianity and Islam while others practice Traditional religion. Each of the religious sects operates without any interference; their peaceful co-existence is a testimony to this fact.

## Politics

Oye Local Government is made up of 12 wards and each ward is represented by a councilor. The Local Government has two constituencies and each constituency produces a member at the State House of Assembly. The Local Government is situated in the northern senatorial district of the state. There is peaceful co-existence among the various political groups in the Local Government which includes: All Progressive Congress (APC), Peoples Democratic Party (PDP), Accord Party, Labour Party, etc.

## Medical

Oye Local Government has three General Hospitals located at Ayede, Oye and Ilupeju/ itapa-Ekiti which is being managed by the Hospitals Management Board, Ekiti State. There are Health Centres in almost every town and village in Oye Local except Oloje, Ilafon and Ilemesho which are managed by the Local Government Council.

## PRESENTATION OF RESULTS AND FINDINGS

**Table 1** Socio-demographic characteristics of respondents

Socio- demographic profiles	Frequencies N -300	Percentages N=100
<b>Age</b>		
20- 30 years	66	22
31-40 years	<b>120</b>	<b>40</b>
41- 50years	96	32
≥51 years	18	6
<b>Sex</b>		
Male	<b>174</b>	<b>58</b>
Female	126	42
<b>Marital status</b>		
Single	57	19
Ever married	<b>240</b>	<b>80</b>
Widow	3	1
<b>Religion</b>		
Christianity	<b>255</b>	<b>85</b>
Islam	45	15
<b>Qualification</b>		
NCE	123	41
BSC	<b>153</b>	<b>51</b>
Others	24	8
<b>Years of experience</b>		
1-10 years	<b>162</b>	<b>54</b>
11-20years	87	29
21-30years	75	25
≥ 31 years	6	2

Majority of the respondents are within 31-40 years age limit, male, married, Christians and had 1-10 years working experience

**Table 2** Effects of job schedule on health and immunity

Perceived effects	Responses	Frequencies N=300	Percentages N=100
Do you feel stressed after the day's activities?	Never	33	11
	Sometimes	<b>222</b>	<b>74</b>
	Others	45	15
Do you suffer from any of these ailments e.g. Headaches, anxiety, e.t.c?	Never	123	41
	Sometimes	<b>147</b>	<b>49</b>
	Often	30	10
If your answer is sometimes or often, did you visit hospital?	Never	<b>159</b>	<b>53</b>
	Sometimes	111	37
	Often	10	10
Do you know that the above ailments can cause reduce job efficacy and effectiveness if	Never	93	31
	Sometimes	<b>150</b>	<b>50</b>

not treated:	Often	57	19
Does the number of students handled initiate or aggravate the above symptoms?	Never	<b>141</b>	<b>47</b>
	Sometimes	123	41
	Often	36	12
Does work load have any effects on your health status?	Never	<b>129</b>	<b>43</b>
	Sometimes	126	42
	Often	45	15

Most of the respondents (74%) felt stressed after work, experience some ailments but not serious enough to make them visit an hospital. Increased work load is a known aggravating factors of stress symptoms.

**Table 3** Effects of stress, age and gender on health and immunity

Effects of job activity on health	Responses	Frequencies N=300	Percentages N= 100
How active were you at the beginning of your profession?	Very active	<b>255</b>	<b>85</b>
	Active	45	15
	Not active	0	0
Do you think that your profession is stressful?	Never	120	40
	Sometimes	<b>168</b>	<b>56</b>
	Often	12	4
Do you think that your effectiveness as a teachers decreases over the years?	Never	114	38
	Sometimes	<b>171</b>	<b>57</b>
	Often	15	5
Do you have more workload compared with your opposite gender?	Never	129	43
	Sometimes	<b>144</b>	<b>48</b>
	Often	27	9
Does your role at work and home influence your health status?	Never	117	39
	Sometimes	<b>135</b>	<b>45</b>
	Often	48	16
Do you relax after the day's work?	Never	30	10
	Sometimes	<b>174</b>	<b>58</b>
	Often	96	32

Most of the respondents agreed that they were very active when they were newly employed, but the efficiency decreases over the year due to increases workload both at work and home without adequate relaxation.

**Table 4** Effects of coping mechanism on stress, health and immunity

Perceived coping mechanisms	Responses	Frequencies N=300	Percentages N=100
Do you believe that your choice of diet can improve your health and immunity despite the stress at work?	Never	36	13
	Sometimes	87	29
	Often	<b>174</b>	<b>58</b>
Do you take time to exercise?	Never	45	13
	Sometimes	<b>183</b>	<b>61</b>
	Often	72	24
Do you believe that exercise can improve your health status?	Never	36	12
	Sometimes	126	42
	Often	<b>138</b>	<b>46</b>
Do you believe that eating fruits and vegetables can improve your ability to cope with stress?	Never	48	16
	Sometimes	111	17
	Often	<b>141</b>	<b>47</b>

Majority of the respondents rarely believed that their choice of diet can influence their health status, most engaged in regular exercise and thought that it can improve their health status.

**Discussion:** The result from the research questions showed that stress affects the health and immunity as a larger percentage (59%) of the teachers was observed to experience stress in form of headache, backache, anxiety, chest pain, sleeplessness e.t.c. This result is consistent with the findings of (Harrison, 2016) and (Lorraine, 2017) The result of findings on effects of age on health and immune system revealed that immune functioning decreases with normal aging

(Castle 2016) as 62% of the teachers population expressed their reduced rate of work effectiveness over the years in the teaching profession. The result is consistent with (Floyd, 2016) whose finding revealed that aging is associated with decrements in sleep quality and the decrease in sleep depth will lead to less effective teaching performance during the day. Outcome of the findings on effects of gender on immunity shows that 57% of the teachers claimed that the fact of been a male or female does affect their health. This is align with (Adeoye, 2016) and (Cannon, 2015) who revealed that the role of females as wives, mothers and teachers is said to put their health and immune system at risk.

**Recommendations:** On the basis of these findings, it is recommended that; infrastructures that alleviate stress should be provided in the schools by the government. School Clinic should be provided and Health care workers should be posted to each school for the benefits of both teachers and students. Teachers should be recruited on constant basis, so as to, reduce the workload and reduce teachers stress.

Teachers should be health educated by the school Health Nurse and Physical Health Education teachers on the following: Avoidance of smoking, Adequate intake of diet rich in vegetables, whole grains, fruits and low in saturated fat, Exercise regularly, Maintenance of healthy weight, Get adequate sleep Take steps to avoid infection, Avoid alcohol or drink in moderation, Get regular medical screening tests when necessary.

## REFERENCES

1. Adeoye, E. A. (2016). Correlates of stress among teachers. *The Nigerian Journal for Guidance and Counselling*. University Press, University of Ilorin.
2. Ader, R & Felten, D. (2001). Psychoneuro immunology, Third edition. Academic, Press Inc., San Diego.
3. Berghella, M., Ida, C., Tiziana, B. & Patrizia, P. (2012). Immunity and Ageing, Licensee Bio Med Central Ltd.
4. Bhalla, A. K (2012). Differential effects of 1,25-dihydroxyvitamin D3, on Human Lymphocytes, Published by Wisdompress, NewDehli, India.
5. Bla Lock, J. E & Smith, E. M., (2000). A complete regulatory Loop between the Immune and neuro endocrine systems. Third Edition, Edited by BJE, Birmingham, Alabama.
6. Blasé, J. (1986). A qualitative analysis of the sources of teacher stress. American Educational Research Journal. Gulf publishing company, Bedford
7. Brain, M. (2000). Founder of how stuff works published by John Wiley and Sons, North Carolina State University
8. Cannon, J. (1997), Gender differences in host defense mechanisms. *Journal of Psychiatric Research*, Intercollege Physiology Programme and Department of Kinesiology, Pennsylvania State University, Pennsylvania, USA.
9. Castle, S. C., (2000). Clinical relevance of age related immune dysfunction, university of South Carolina, Carolina,
10. Churchill Livingstone Medical Dictionary, (2009). 16<sup>th</sup> Edition Published by Churchill Livingstone Press, Edinburgh.
11. Coleman, J. (1973). Public and Private High Schools; The Impact of Communities, Havard University Press, New York.
12. Cutolo, M. (1986). Sex hormone status in women. 1<sup>st</sup> Edition, Annals of the New York Academy of Sciences, New York.
13. David, B. (1997). Rochester Institute of Technology. R F Communication Publishers, New York.
14. Dysn, M. (2005). Australian Teacher Education. *Australian Journal of Teacher Education*.
15. Elsevier, B. (2011). Stress-related immune changes on mid-Age women. Pergamon Press, Fitrozy Square in West End of London.
16. Eriksen, H. R. & Ursin, H. (1999). Subjective Health Complaints: Is coping more important than control?
17. Glaser, R., MacCallum, R. & Malarkey, W. (1989). Evidence for a shift in cytokine response associated with chronic stress. Amicus Associate Publisher, Marysville, California.
18. Glenn, D. (2013). POED6, Series of the Agricultural Educational and Communication Department, University of Florida, Gainesville.
19. Grossman, C. (1984). Possible underlying mechanisms of sexual dimorphism in the immune response, fact and hypothesis. *Journal of steroid Biochemistry*. College of Medicine, University of Cincinnati, Cincinnati.