

The Burden of Jetlag among Nigerians Studying in Indian and Malaysian Universities

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Abstract

Background: There are a large number of Nigerians studying and aspiring to study in India and Malaysia. Due to the great time-zone differences between Nigeria and these countries, there exists the possibility of experiencing adjustment problems.

Aim of the study: To determine the burden of jetlag phenomenon and the distribution of its symptoms among Nigerians studying in these countries.

Methodology: Online surveys using Google forms were disseminated to Nigerians studying in Indian and Malaysian Universities and the data were analyzed.

Results: A hundred and three (103) eligible persons responded to the survey, most of whom were males (86.4%) and married (58.3%). Many of them did not know what jetlag was (52.4%). Most, also reported falling asleep less easily on their first night of arrival (78.6%), of whom 44.4% continued to experience same for months and even up to a year. Many also reported having more wakeful episodes during the night (41.7%); later waking time (56.3%); feeling less alert 30 minutes after waking from sleep (58.3%) and generally feeling more tired since arrival (57.3%), with many of them haven experienced same for prolonged durations. A higher proportion of those studying in Malaysia, reported experiencing these symptoms, compared to those studying in India. As an adjustment/coping technique, most of them had attempted maintaining daytime alertness (72.8%) and maintaining a dark room at night (55.3%), of whom 21.0% and 31.6% respectively found these measures very effective, while 57.3% and 50.8% respectively found them slightly effective.

Conclusions: This study reveals the great enormity of this problem. It is recommended that prospective students be enlightened on the possibility of experiencing this problem and adjustment techniques even before departure from Nigeria. School clinics in these countries should also include jetlag management in their treatment programs to help affected international students.

Keywords: Jet lag, Universities, India, Malaysia, Nigeria

Introduction

The American Academy of Sleep Medicine (AASM) defines jet lag as insomnia or sleepiness, with impaired total sleep time, after crossing a minimum of two time zones, with impairment of daytime function, general malaise or somatic symptoms within one or two days of travel, in the absence of other causes of these symptoms [1]. It occurs after journeys in which three or more time-zones have been crossed [2]. They are the result of a shift in the usual circadian rhythm, in an effort to adjust to the new environment [3]. This adjustment of the biological clock to phase shifts in the external environment does not occur immediately [4]. The occurrence of these symptoms have been reported to be more severe in east-ward travels [5]. Previous studies on jet lag phenomenon seem to have been conducted among short stay

visitors like athletes and conference attendees [6-8]. Despite the high number of Nigerians as current and prospective students in India and Malaysia; the huge east-ward time-zone differences between Nigeria and these two countries; and the possibility of adjustment problems arising as a result, there has been no previous attempt to study this phenomenon among this population. The aim of this study was to determine the burden of jetlag phenomenon and adaptation strategies among Nigerians studying in these countries.

Materials and Methods

Malaysia and India are located east-wards away from Nigeria, with their local times, seven hours and four and a half hours respectively ahead of the local time in Nigeria. This research utilised a cross-sectional study design in which online surveys using Google forms were used to disseminate a structured questionnaire to Nigerians studying in Indian and Malaysian Universities after permission to carry out this research had been obtained from the Office of

Presidents of the Nigerian students Community of Malaysia and India. The questionnaire was adopted from the Liverpool jetlag questionnaire [9]. Data was retrieved and analysed using Statistical Package for Social Sciences (SPSS) version 22. Frequencies and percentages, were used to summarise the data. Chi-squared test was used to determine whether or not, differences existed between the two countries in the symptoms they experienced. In the chi-squared test analysis, samples with missing data were excluded.

Results

The respondents' socio-demographic characteristics are presented in Table 1. A total of one hundred and three (103) eligible persons responded to the survey. Their ages from 20 to 47 years with median + IQR (31 + 10). Most were males (86.4%) and from the North-western part of Nigeria (54.4%). Only 27.2% were undergraduates, with rest being Masters and Doctor of Philosophy (Ph.D.) students. Over a half were studying in Malaysia (55.3%).

Table 1: Socio-demographic characteristics of respondents

Variables	
Age	
Median + IQR	31 + 10
Range	20 – 47
Gender	Freq. (%)
Male	89 (86.4)
Female	13 (12.6)
Missing	1 (1.0)
Total	103 (100)
Region of origin	Freq. (%)
North-east	56 (2.9)
North-west	28 (54.4)
North-central	7 (27.2)
South-east	1 (6.8)
South-west	8 (1.0)
Missing	3 (2.9)
Total	103 (100)
Marital status	Freq. (%)
Single	43 (41.7)
Married	60 (58.3)
Total	103 (100)
Course of study	Freq. (%)
Bachelor	28 (27.2)
Masters	37 (35.9)
PhD	36 (35.0)
Missing	2 (1.9)
Total	103 (100)
Country of study	Freq. (%)
India	44 (42.7)
Malaysia	57 (55.3)
Missing	2 (1.9)
Total	103 (100)

Less than half of the respondents were aware of the phenomenon called jetlag (46.6%) as shown in Figure 1. Table 2 presents the sleep-related problems experienced by some of the respondents. Most of them (78.6%) fell asleep less easily on the first night of their arrival, out of whom 44.44% continued to experience same for months and even up to a year. Many of them had also experienced other symptoms of jetlag phenomenon on their first night of arrival like: having more wakeful episodes during the night (41.7%); later waking time (56.3%) and feeling less alert 30 minutes after waking from sleep (58.3%).

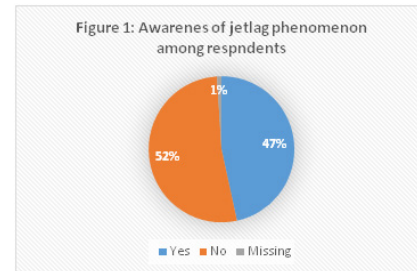


Table 2: Sleep-related experiences by respondents since arrival

Variable	Frequency (n)	Percentage (%)
Ease of sleeping at first night of arrival		
Less easily	81	78.6
Same easily	19	18.4
More easily	3	2.9
Total	103	100
Time of first night's sleep		
Earlier	19	18.4
Same	16	15.5
Later	68	66.0
Total	103	100
Well sleep on first night		
Fewer waking	35	34.0
Same	25	24.3
More waking	43	41.7
Total	103	100
Waking time		
Earlier	26	25.2
Same	17	16.5
Later	58	56.3
Total	103	100
Alertness 30 mins after waking		
Less	60	58.3
Same	23	22.3
More	17	16.5
Missing	3	2.9
Total	103	100

Other autonomic experiences by the respondents are presented in Table 3. Many reported feeling generally more tired since arrival (57.3%). However, fewer persons reported having other symptoms

like: a worse level of concentration since arrival (34%); lower level of motivation (32.0%); greater irritability (22.3%); more bowel movements (13.6%) and a looser stool consistency (21.4). A great number of the respondents even reported having a better level of concentration (43.7%), with higher levels of motivation (51.5%) since arrival at their countries of study.

Table 3: Other autonomic experiences by respondents since arrival

Variable	Frequency (n)	Percentage (%)
Tired since arrival		
Less	20	19.4
Same	21	20.4
More	59	57.3
Missing	3	2.9
Total	103	100
Concentration on arrival		
Worse	35	34
Same	21	20.4
Better	45	43.7
Missing	2	1.9
Total	103	100
Motivation since arrival		
Less	33	32.0
Same	13	12.6
More	53	51.5
Missing	4	3.9
Total	103	100
Irritability since arrival		
Less	49	47.6
Same	22	21.4
More	23	22.3
Missing	9	8.7
Total	103	100
Bowel movement		
Less	34	33.0
Same	49	47.6
More	14	13.6
Missing	6	5.8
Total	103	100
Stool consistency		
Looser	22	21.4
Same	47	45.6
Harder	26	25.2
Missing	8	7.8
Total	103	100

As seen in Table 4, for those who experienced those adverse jetlag symptoms, only around a quarter of them had those experiences for only a few days. For the remaining majority, those symptoms had lasted for weeks and even up to a year.

Table 4: Duration for which symptoms lasted

Slept less easily since first night	Frequency (n)	Percentage (%)
Days	29	35.8
Weeks	16	19.8
Months	20	24.7
Up to a year	16	19.8
Total	81	100
Slept later since first night	Frequency (n)	Percentage (%)
Missing	3	4.4
Days	13	19.1
Weeks	19	27.9
Months	20	29.4
Up to a year	13	19.1
Total	68	100
Had later waking times	Frequency (n)	Percentage (%)
Missing	3	5.2
Days	11	19.0
Weeks	15	25.9
Months	17	29.3
Up to a year	12	20.7
Total	58	100
Felt less alert since arrival	Frequency (n)	Percentage (%)
Missing	6	10.0
Days	17	28.3
Weeks	14	23.3
Months	15	25.0
Up to a year	8	13.3
Total	60	100
Feeling tired since arrival	Frequency (n)	Percentage (%)
Missing	5	8.5
Days	13	22.0
Weeks	18	30.5
Months	14	23.7
Up to a year	9	15.3
Total	59	100

Table 5 presents a comparison of symptoms by country of study. There was no significant difference between those studying in Malaysia and India in their knowledge of jetlag; ease of falling asleep; number of waking episodes and level of alertness 30 minutes after waking. However, those studying in Malaysia reported sleeping later ($\chi^2=16.68$; $df=6$; $p=0.011$); waking up later ($\chi^2=25.78$; $df=4$; $p<0.001$) and feeling more tiredness ($\chi^2=21.74$; $df=6$; $p=0.001$) compared to those studying in India.

Table 5: Comparison of jetlag symptoms by country of study

Jetlag symptom	Country of study			χ^2	df	p
	India Freq. (%) n = 45	Malaysia Freq. (%) n = 56				
Ease of sleeping at first night of arrival			-	-	0.066a	
Less easily	30 (66.7)	49 (87.5)				
Same easily	12 (26.7)	7 (12.5)				
More easily	3 (6.7)	0 (0.0)				
Total	45 (100)	56 (100)				
Time of first night's sleep			23.05	2	<0.001*	
Earlier	17 (37.8)	2 (3.6)				
Same	9 (20.0)	7 (12.5)				
Later	19 (42.2)	47 (83.9)				
Total	45 (100)	56 (100)				
Waking time			7.87	2	0.02*	
Earlier	14 (31.1)	20 (35.7)				
Same	17 (37.8)	8 (14.3)				
Later	14 (31.1)	28 (50.0)				
Total	45 (100)	56 (100)				
Alertness 30 minutes after waking			17.13	2	<0.001	
Less	19 (43.2)	7 (12.7)				
Same	10 (22.7)	7 (12.7)				
More	15 (34.1)	41 (74.5)				
Total	44 (100)	55 (100)				
Tired since arrival			3.16	2	0.206	
Less	9 (20.9)	11 (19.6)				
Same	12 (26.9)	8 (14.3)				
More	22 (51.2)	37 (66.1)				
Total	43 (100)	56 (100)				

Note: (*) – significant $p < 0.05$; (a) – Fisher’s exact test

As presented in Table 6, most of them had attempted maintaining daytime alertness (72.8%) as a measure to tackle the problem of jetlag, and 21% of those who did, reported it to be very effective, while 57.33% had reported it to be slightly effective. Many had also attempted maintaining a dark room at night (55.3%), of whom 31.58% had reported it to be very effective, while 50.88% said it was slightly effective. Chi-squared test results also revealed that for each of the symptoms studied, there was no significant difference by gender or marital status.

Table 6: Coping measures adopted by some respondents

Frequency of Those who Adopted Some Coping Strategies		
Type of strategy	Frequency (n)	Percentage (%)
Day time alertness		
Yes	75	72.8
No	23	22.3
Missing	5	4.9
Total	103	100
Maintaining a dark room		
Yes	57	55.3
No	42	40.8
Missing	4	3.9
Total	103	100
Effectiveness of Coping Strategies among Those Who Adopted Them		
Type of strategy	Frequency (n)	Percentage (%)
Day time alertness		
Missing	4	5.3
Not effective	7	9.3
Slightly effective	43	57.3
Very effective	21	28.0
Total	75	100
Maintaining a dark room		
Missing	2	3.5
Not effective	8	14.0
Slightly effective	29	50.9
Very effective	18	31.6
Total	57	100

Discussion

All the respondents were adults, as none was below the age of 18 years. The distribution of course of study among respondents also shows that Nigerians were more likely to go for post-graduate studies in those countries as less than a third (27.2%) were undergraduate students. Over three fourths (78.6%) had reported difficulties in falling asleep on their first nights of arrival to their respective countries of study. This agrees with an earlier report that only one-third of travellers do not experience jet lag symptoms [10]. Despite its enormity and the high academic levels of the respondents, over a half of them did not know what jet lag was. The east-ward location of the two countries relative to Nigeria, meant that their usual sleeping time in Nigeria before departure were reached earlier, in their new time-zones, posing adjustment problems to their biological clocks [11], explaining the difficulty in initiating sleep on the first night of their arrival. Their later waking times could be explained by their late sleeping time, while the lower level of alertness after waking could likely have been from the sleepiness after waking, due to insufficient sleep the last night.

The greater level of tiredness among the respondents could be explained by the several hours journey they had covered from Nigeria to India or Malaysia. Better study facilities and motivating study environments are the likely reasons why the respondents experienced better concentration and motivation in their new

countries of study. As many as 13.3% to 20.7% had experienced those symptoms for up to a year demonstrating how persistent they could be, among certain individuals. This is a serious problem requiring intervention, as chronic jet lag has been reported to cause temporal lobe atrophy and spatial cognitive deficits [12]. For all jet lag symptoms reported, the proportion of those who experienced each one of them was higher among those in Malaysia compared to those in India though not all were statistically significant, which agrees with earlier findings of higher severity with more time zones crossed [13].

The two coping strategies of maintaining a dark room and maintaining day time alertness had to a large extent proven effective. It is as such, recommended that prospective students be enlightened on the possibility of experiencing this problem and on adjustment techniques even before departure from Nigeria. School clinics in these countries should also incorporate into their services rendered, jetlag management, to help affected international students. Melatonin treatment has also been reported to be very effective [14]. Further studies are also required to better understand the molecular basis of jet lag so as to discover more effective treatment options.

Conclusion

Most Nigerians studying in Malaysia and India have reported experiencing jet lag symptoms. The prolonged duration of these symptoms are also worrisome. Despite the enormity of the problem however, the majority are unaware of it. There is as such the need for raising awareness among prospective and current students on this phenomenon, and putting in place treatment programmes for affected persons. Similar studies should also be replicated among others, studying in countries with time-zones at least three hour's different from theirs.

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