Research Topic :

Effect of jet Lag on cabin crew/pilots during long haul flights

Prepared by:

Capt®Dr Raza Haider Nadeem Khan

(Dip AvnMed)

Department:

Department of aviation Medicine DUHS

Supervisor:

Dr G. Kadir A. Sheikh

Abstract:

The aim of this paper is to document the effects of jet lag on the cabin crew of a commercial airliner by conducting a questionnaire survey.

It will also outline remedial measures available physiologically and medically as well as recommending short to long term inflight remedies that may help crew to combat effect of jet lag on long haul flight.

A total of 25 cabin crew including pilots participated in the survey.

Name and organisation of the crew has been deliberately classified and restricted so that confidentiality may be maintained.

The age of the cabin crew was divided in to two slot;one below 40 and the other above 40.

Hypertension and Diabetes mellitus were the most common chronic diseases encountered in the survey, where as no disabiliy existed in any individuals physically.

90% of the cabin crew were aware of the phenomenon of Jet Lag, whereas 95% reported symptoms of Jet Lag to some extent which was categorically slotted in to mild, moderate and severe.

Approximately more profound effects were seen in far Eastern bound route in taxing than flying West.

The most difficult flights pointed out as opinion by the crew were the continuous short haul night flights, perhaps due to lack of fatigue and quality sleep.

Coping mechanisms included use of alcohol 10% or drugs (anxiolytics) 65% to induce sleep or often in combination.

Individual coping strategies included exercise at the layover hotel or forced sleep, to combat Jet Lag.

Suggestion as per recommendation after survey is organization has to strictly implement a flight schedule to overcome the peculiar job related disorder especially during long haul east bound flights.

Hypnotics (short acting) are helpful in adjusting to the new time zone for adequate sleep ,if at all necessary.

There is a ample need to develop and implement medical standards for cabin crew along the the laid criterior of medical categories.

Introduction:

Jet lag, Le decalage horiaire (French), medically referred to as desynchronosis is a physiological condition which results from alterations to the body's circadian rhythms resulting from rapid long-distance trans-meridian (east–west or west–east) travel on high-speed aircraft.

It is considered a circadian rhythm sleep disorder which is disruption of internal body clock while crossing different time zones usually more than three.

The term Jet lag is relatively new one because up to about 80 years back no body travelled across many time zones rapidly for there were no jets or any other kind of such transportation.

The world has 24 time zones one for each hour of the day.

The time zone is a geographical region which has the same time every where within it.

These zones runs from north to south in strips that are approximately1000 miles wide.

As the earth rotates ,dawn occurs at a set hour in one time zone and thereafter an hour later to the next time zone immediately to the west and so through the 24 hours cycle.

The cause of jet lag is the inability of the body of traveller to adjust immediate changes brought about by time zone.

The condition of jet lag may last several days before the traveler is fully adjusted to the new time zone.

A recovery period of one day per time zone crossed is a suggested guideline.

Thus when a New yorker arrives in Paris at Midnight Paris time, his body continues to operate on new York time coping to struggle new schedule.

This sudden change causes temporary effects on body reacting in to various sign and symptoms noticeable to the traveller as it attempts to juggle schedule and new change of time.

These sign and symptoms may be mild to moderate depending upon physical condition ,health ,fitness, age and different preexisting co-morbidities as anemia ,diabetes, heart and lung diseases.

Jet lag is especially an issue for airline pilots, crew, and frequent travelers.

Jet lag is a most troublesome issue in frequent travellers especially Cabin crew and Pilots causing lack of sleep ,irritability and fatigue resulting in to poor ability to concentrate, confusion and disorientation.

However Airlines have regulations and guidelines aimed at combating variant unwanted efects that may hamper safety as well as pilot ad cabin fatigue caused by jet lag.

Jet lag is a chronobiological problem, similar to issues often induced by shift work and the circadian rhythm sleep disorders.

When travelling across a number of time zones, usually more than 3, the body clock (circadian rhythm) will be out of synchronisation with the destination time.

The body's natural pattern is upset, and the rhythms that dictate times for eating, sleeping, hormone regulation, body temperature variations, and other functions no longer correspond to the environment, nor to each other.

It is to the degree that the body cannot immediately realign these rhythms culminating in to jet lag.

The speed at which the body adjusts to the new schedule depends on the individual as well as the direction of travel; some people may require several days to adjust to a new time zone, while others experience little disruption and without significant change.

Jet lag is linked only to the trans-meridian (west–east or east–west) distance travelled.

A ten-hour flight between Europe and southern Africa does not cause jet lag, as the direction of travel is primarily north–south.

A five-hour flight between the Pacific and Atlantic coasts of the United States may well result in jet lag.

This suggest jetlag a particular abnormality of east -west bound flights or west- east bound flights.

Aims & Objectives:

With advancing technology and day to day changes, airliners / aaviation has become the fastest mode that have taken the image of necessity of the century.

Due to continous advancement and fastest tracking on geo garphical mapping multiple time zones crossings in variant meridians has effected the natural biological clock of the traveller especially effecting the Cabin Crew and as such known as circadian rhythm resulting in susceptibility to diseases and vulnerability to exposures related risk and hazards hence culminating in to inadequate work profile.

Researches have shown variant temporary sign and symptoms that has eventful impact on the traveller especially Cabin Crew members and pilots as well as frequent flyers.

It is said and found that these sign and symptoms have links from cabin air environment to underlying medical conditions and from duty-shift changes to increase work load all engaging the traveler and crew from physical fitness to mental derangement.

Although Airlines have regulations and guidelines aimed at combating pilot/ cabincrew fatigue caused by jet lag yet continous travelling, inavriable timing and unsheduled shifts without breaks leaves impact on health issues hence performance especially on inflight Cabin crew members and pilots.

One of the most dramatic effect of such concealed ailments is a jet lag earned during long haul flights that cause frequent episodes dragging as common symptom known in layman terminology as Jet Lag.

The aim of this research is to identify factors that cause effect as jetlag resulting from long haul flight and its effect on frequent flyers like cabin crew and pilots especially when they cross different and multiple time zone.

This research is to rejuvenate and isolate such factors in order to exercise flight safety without compromising health in mandatory environment that may continue to play potentially as risk and hazard throughout in cabin crew members /pilots and their career life.

Method:

A questionnaire as preformed was made. Subjects were randomly selected during survey putting Cabin crew and Pilots as mean and objective focus.

Independent question concerning sign and symptoms of jet lag were put directly / indirectly with special interest to sleep deprivation, fatigue, stress, physical health, psycho physiological effect and co- morbid existing diseases that may cause or enhance effect of jet lag on long haul flights were emphasized.

Names were deliberately kept confidential and ethically so to keep confidentiality as liability.

Age was slotted in to two category one below 40 and other above 40.

Since the study was selective and categorically focused to Cabin crew/pilots our selection criteria could not allow access to too many subjects and as such 25 different airlines cabin Crew members on long haul flights including Pilot and Co-pilot were subjected to these questionnaire

Results:

As has been discussed

(a) Average Age below 40 was between 25 to 35 years where as average age above 40 was 42 to 55 years

(b) Approximate Flying Hours Per Month

(c) Pre-existing Medical Disability

(i) Hypertension

(ii) CAD

(iii) Diabetes mellitus

(d) Basic Knowledge of Jet Lag

(e) Symptoms of Jet Lag Present

(f) Easier Flying

(i) East

(ii) West

(g) Most Difficult Flights (in decreasing order of difficulty)

(i) Continuous short haul night flights

(ii) Far East

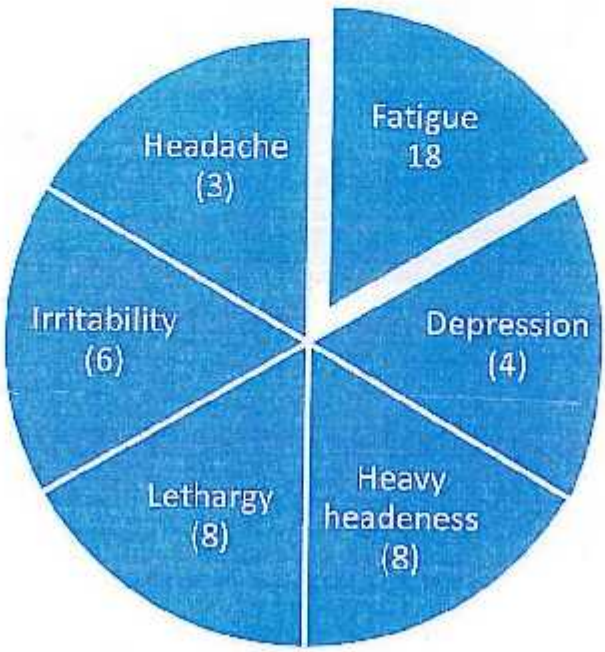
(h) Coping Mechanism

(i) Alcohol

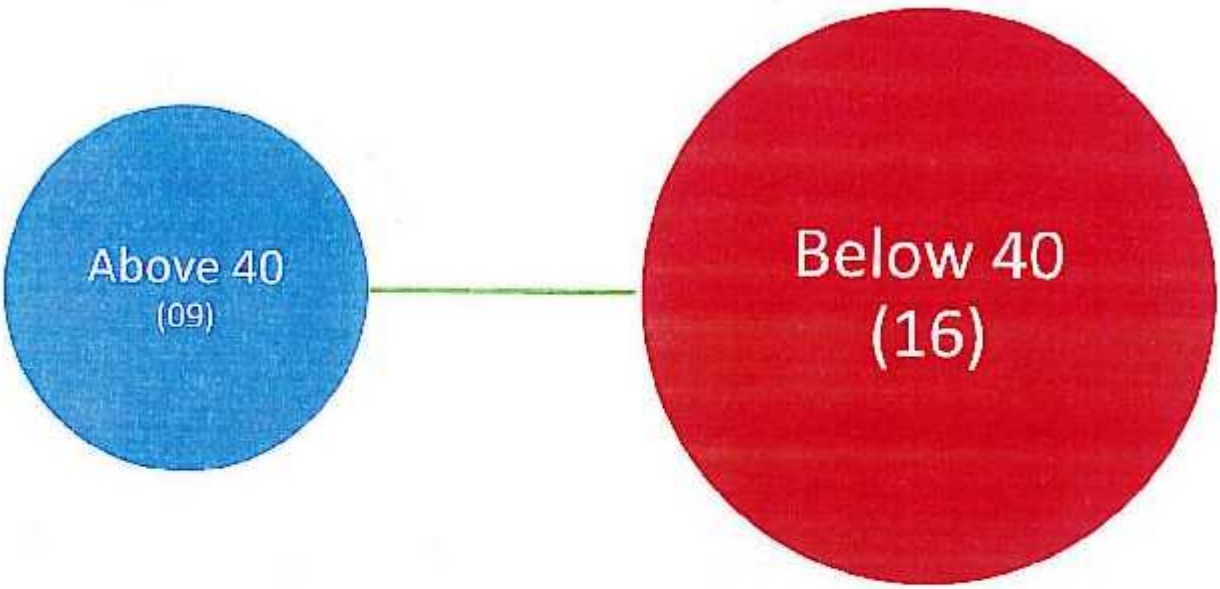
(ii) Drugs

(iii) Smoke ,use tea, coffee or similar caffeinated product?

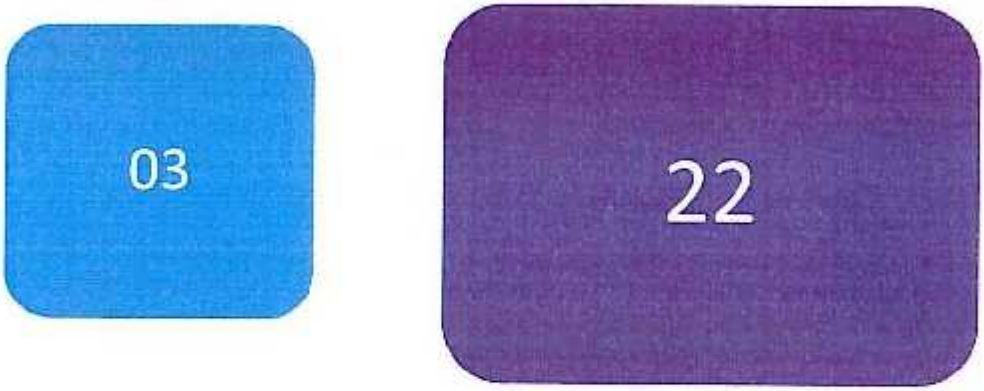
(iv)Miscellaneous (Exercise, Forced Sleep)



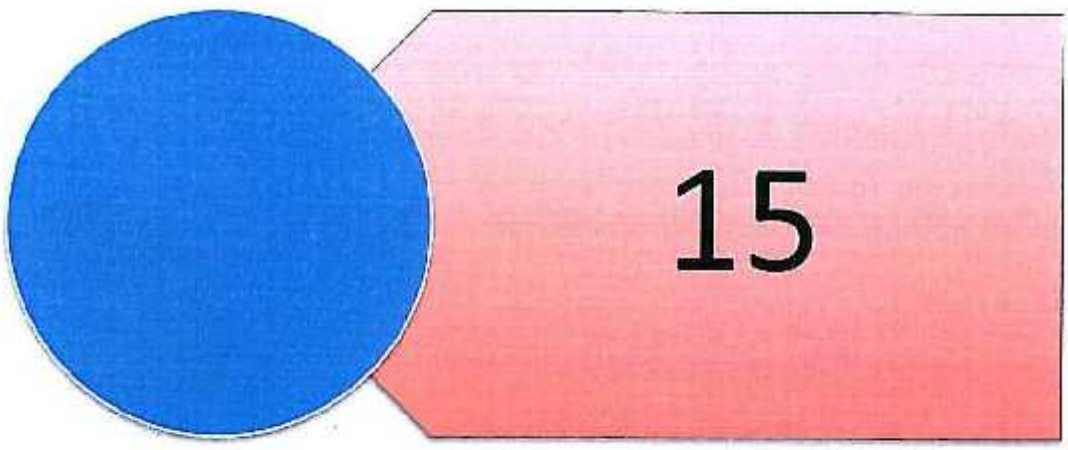
Meal taken during long haul flights

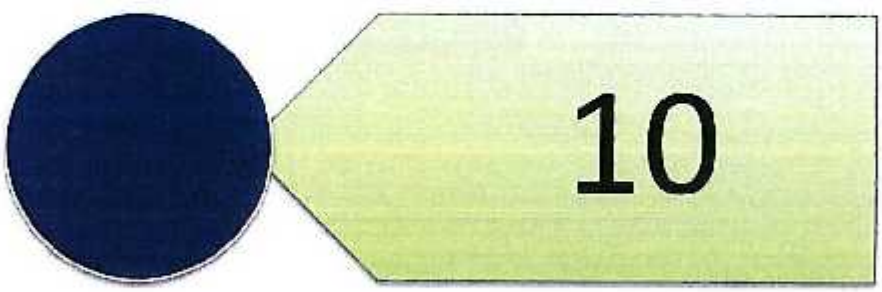


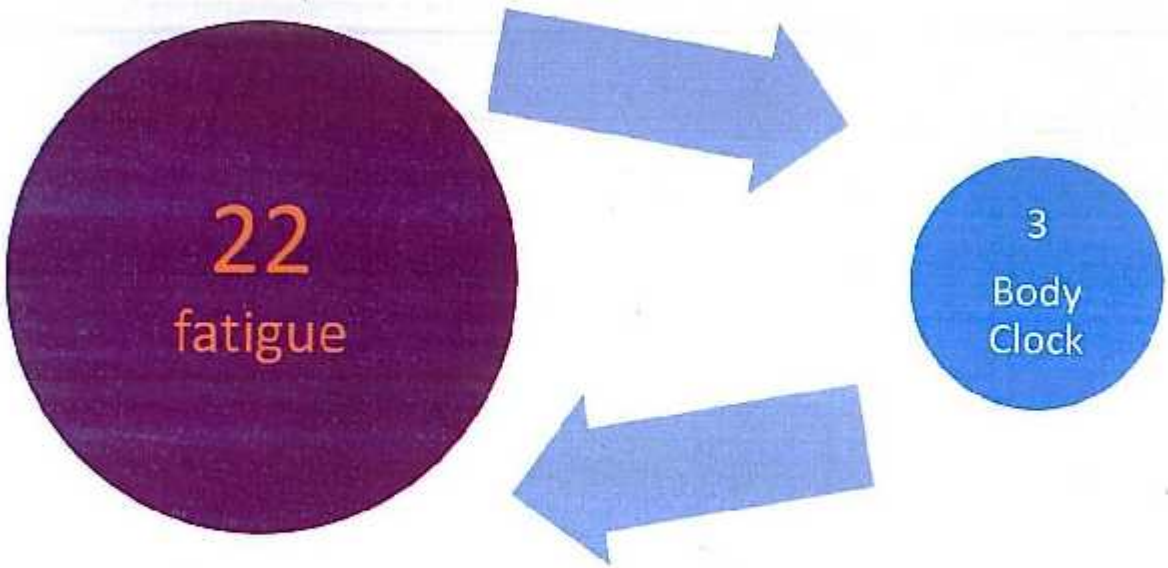
Age Group Above 40 / Below 40



(individuals, Physically Fit, Rest properly,



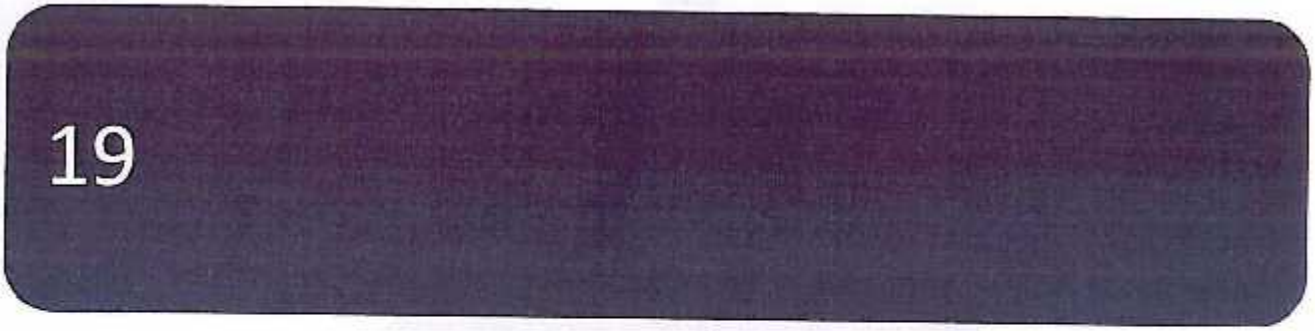


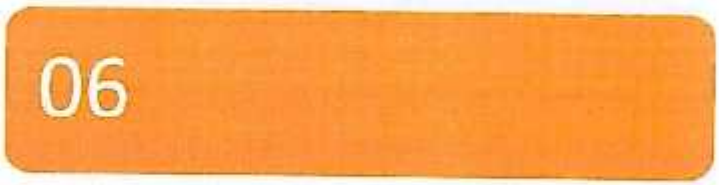


Fatigue and Internal body clock

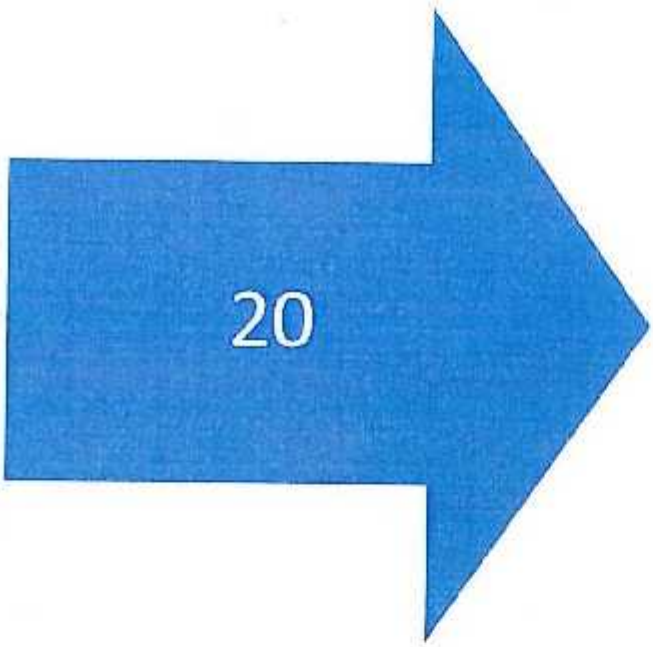


Individual with inability to adjust Individual with sleep disorder body while travelling different time zone



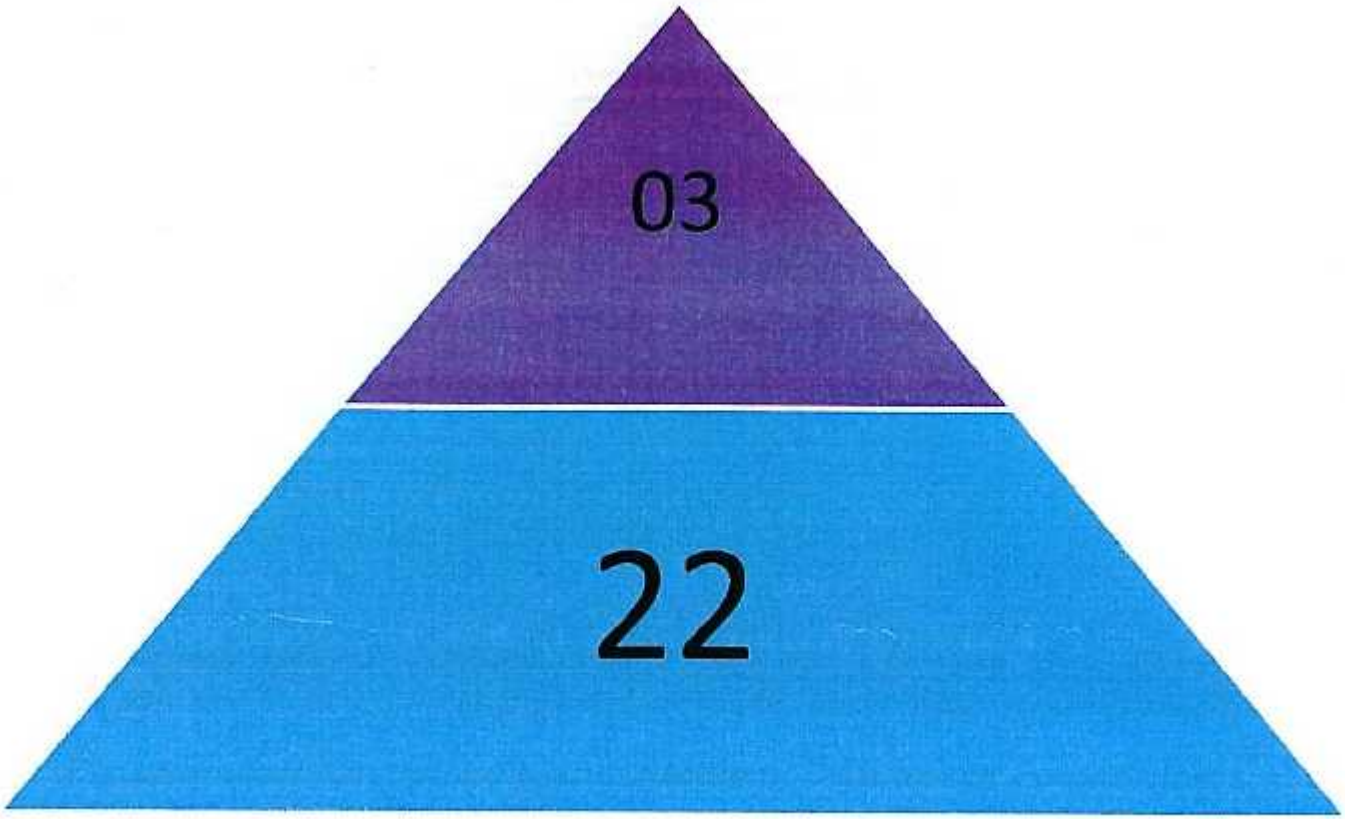


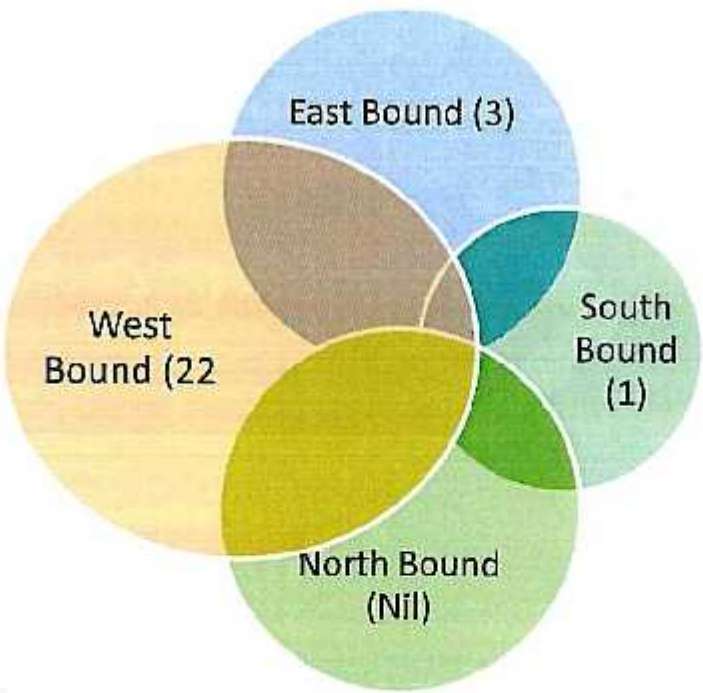
During long haul flight





Impaired concentration

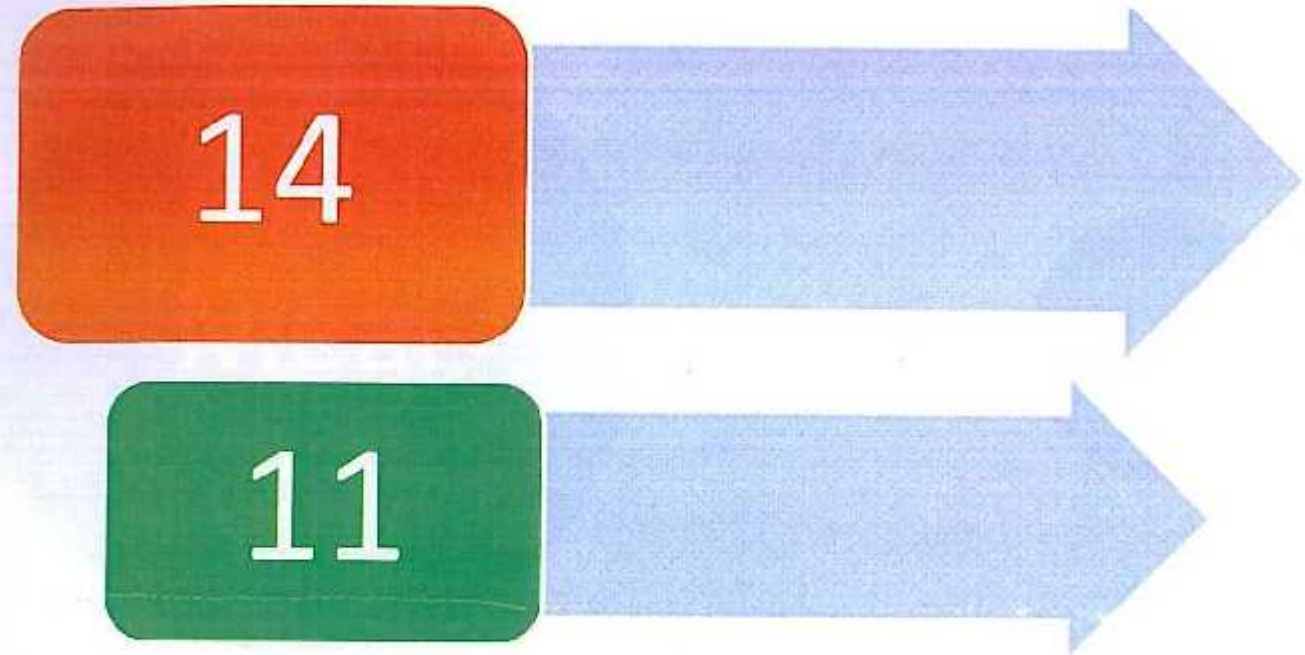




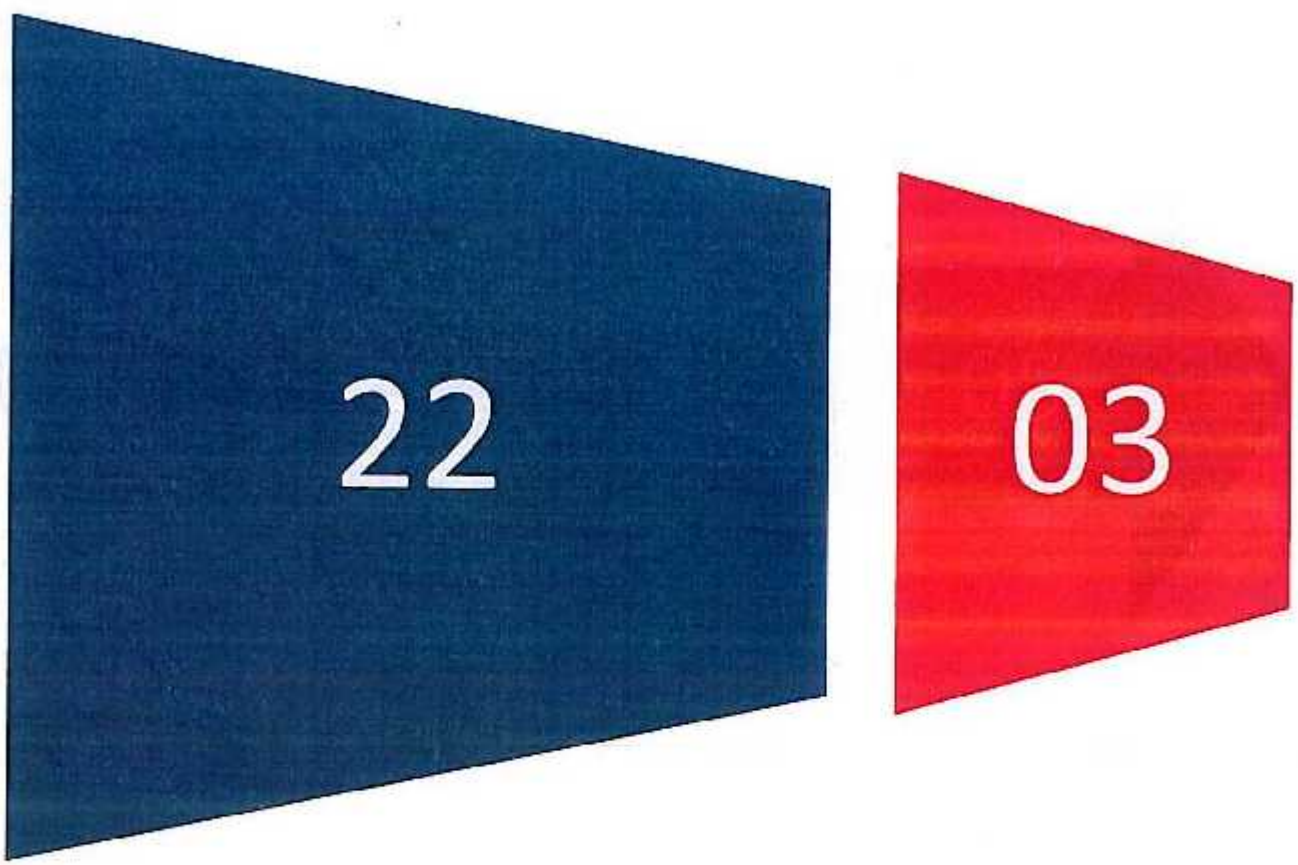
Derange bowel habits

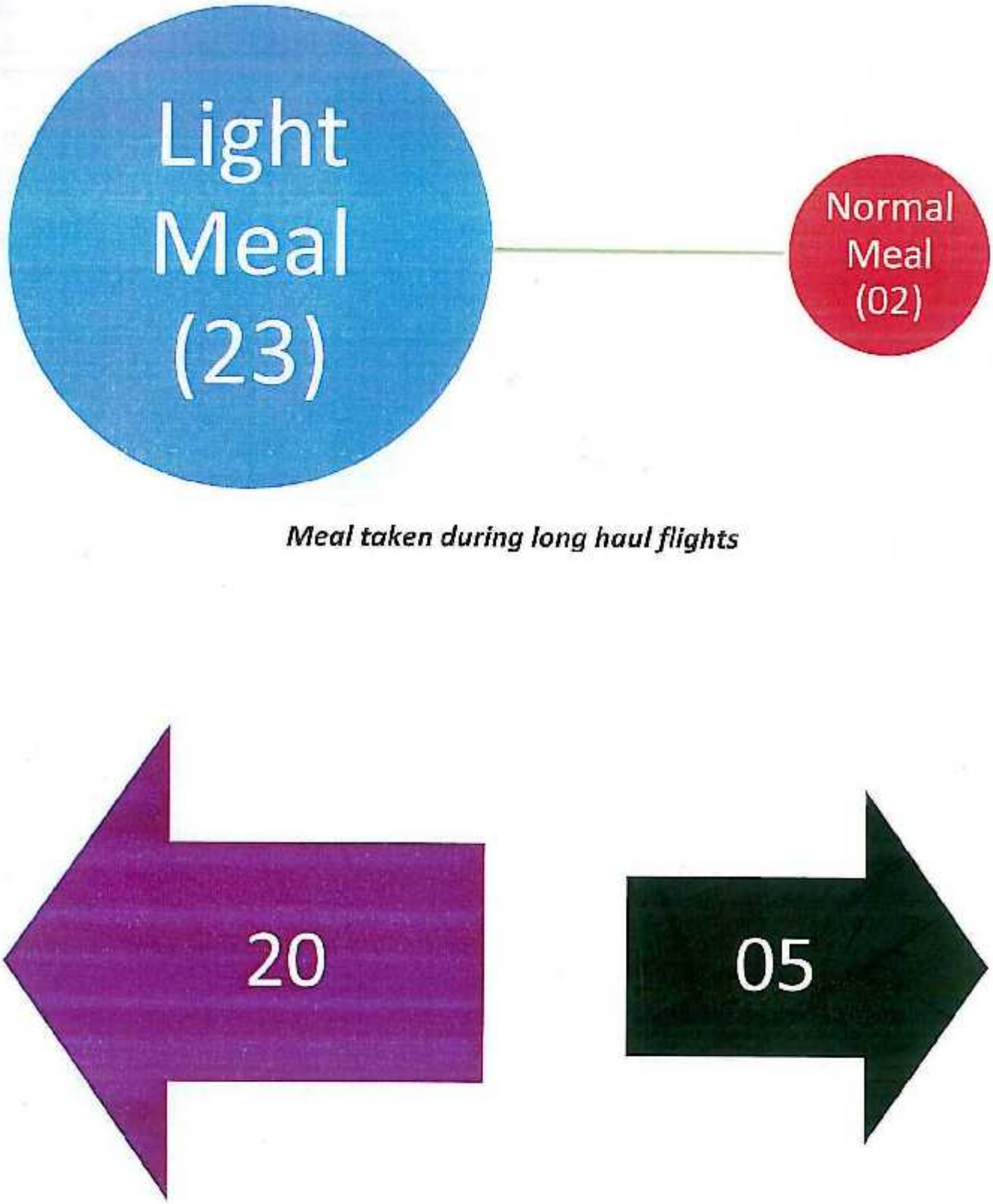


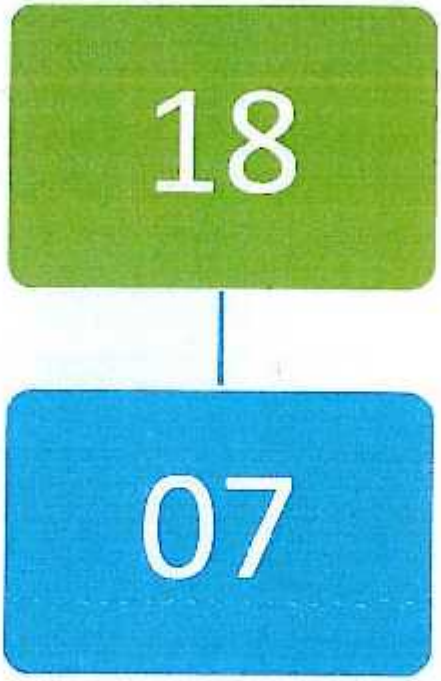
Disturbance in Circadian Rhythm Problem, Dizziness or Forgetfulness



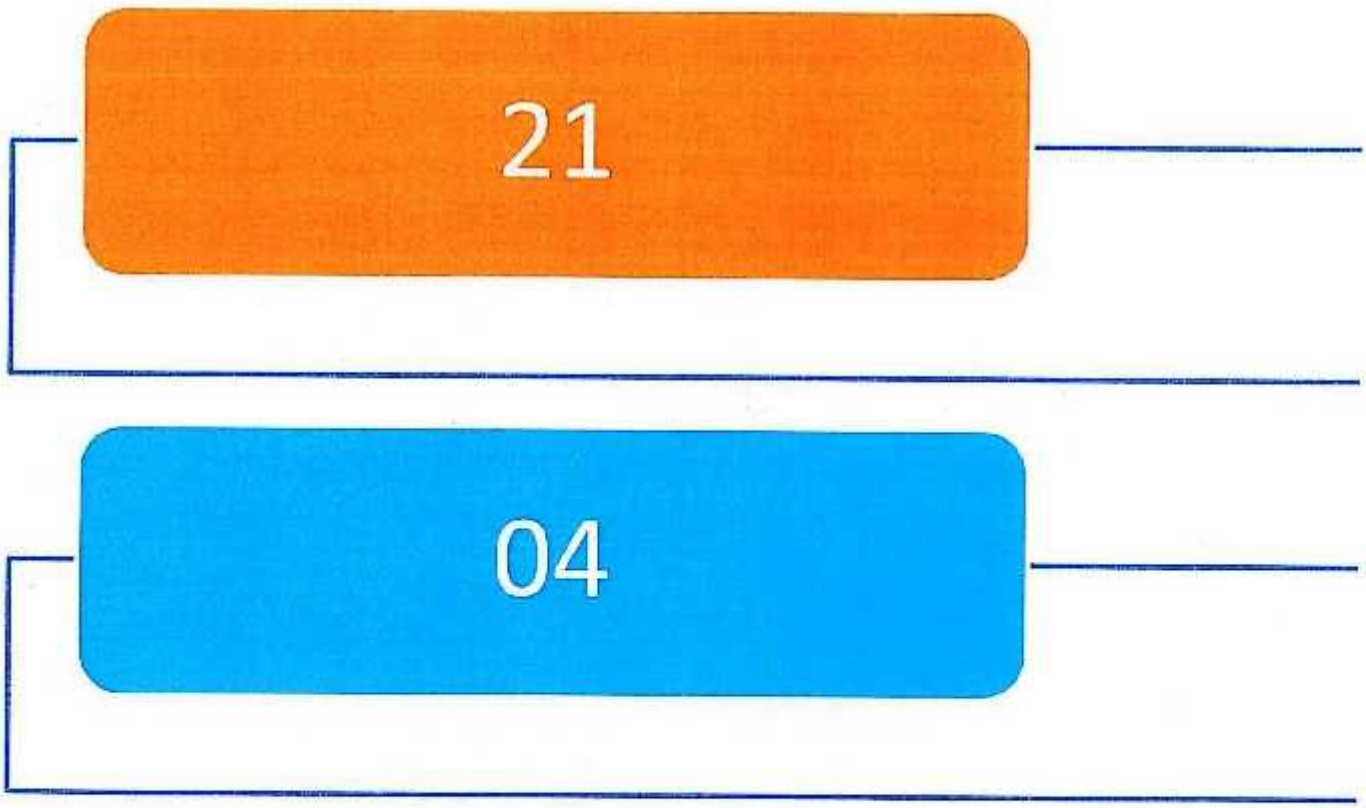
Heart Beat irregularities



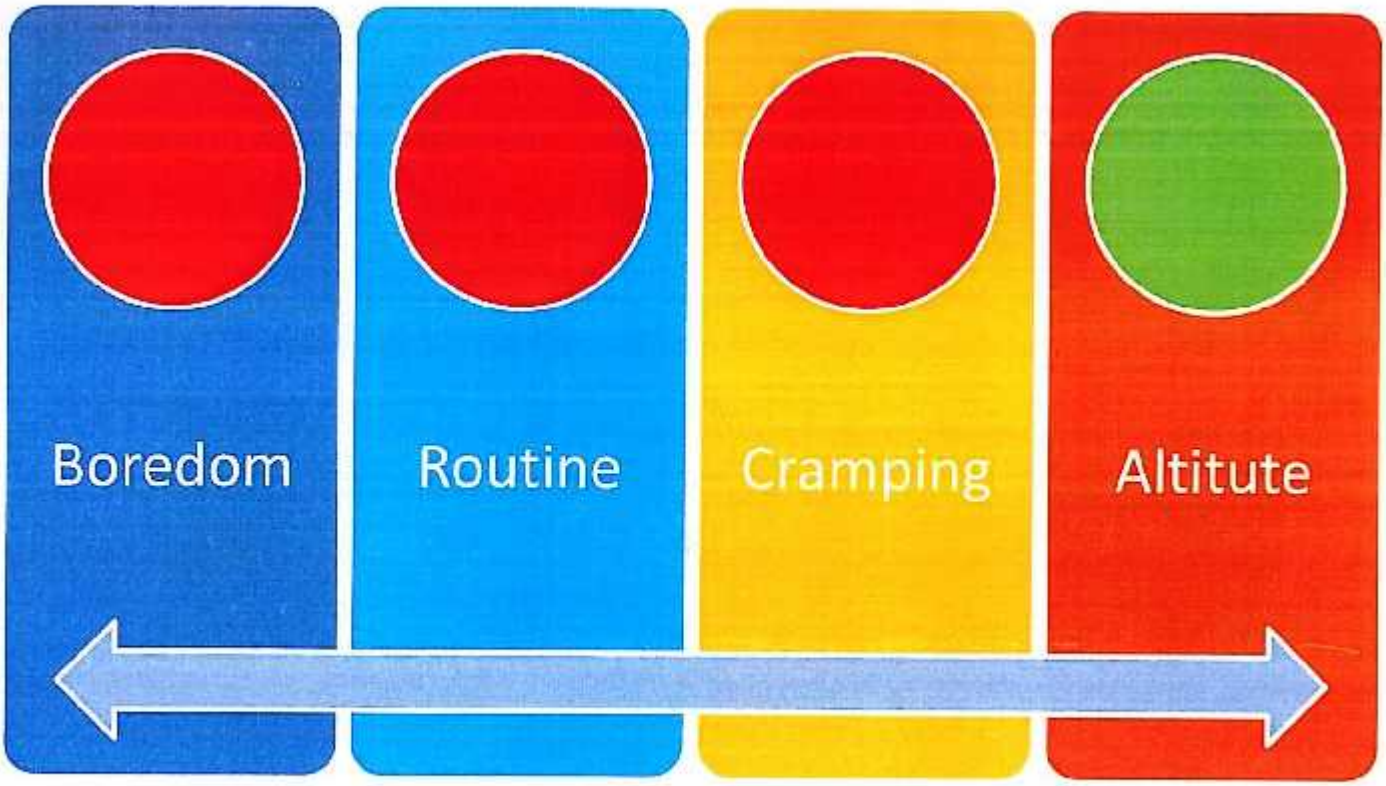

Light Meal (23)
Normal Meal (02)
Meal taken during long haul flights
20
05



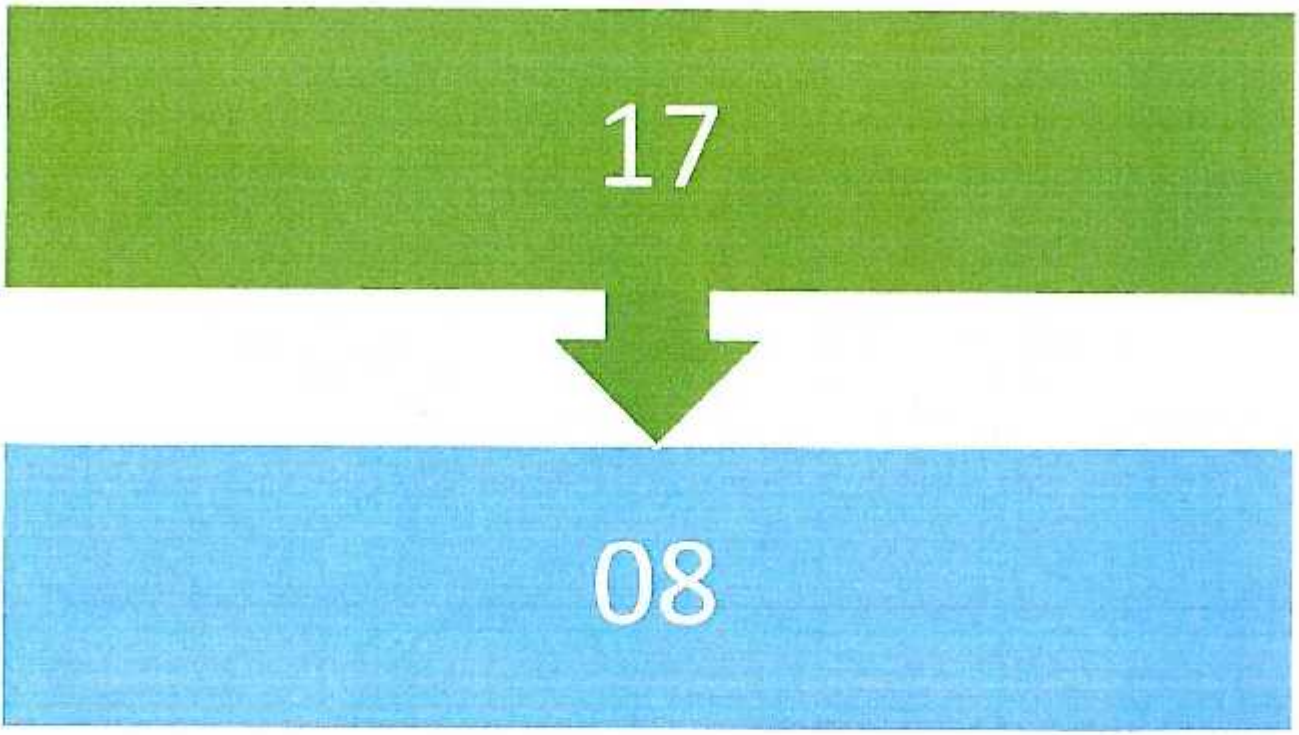
Symptoms related to Jeglag more Travel in different time zone frequently than three time zone



Drink occasionally at leisure



Sleep Habits

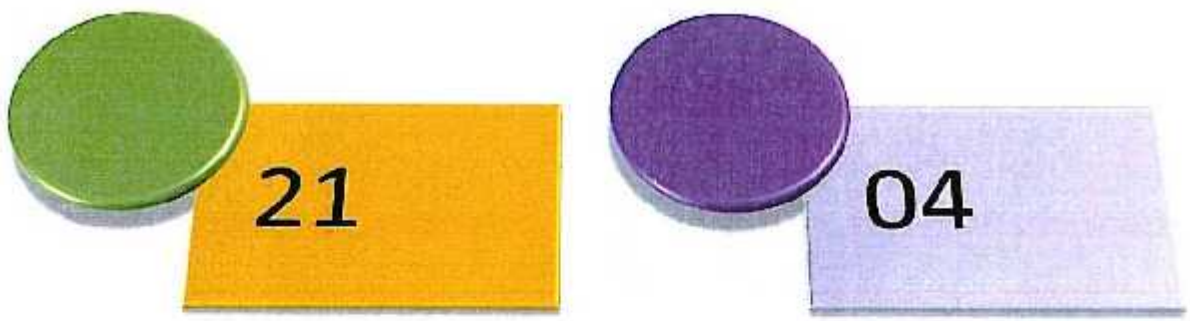


Drink occasionally at leisure friendly

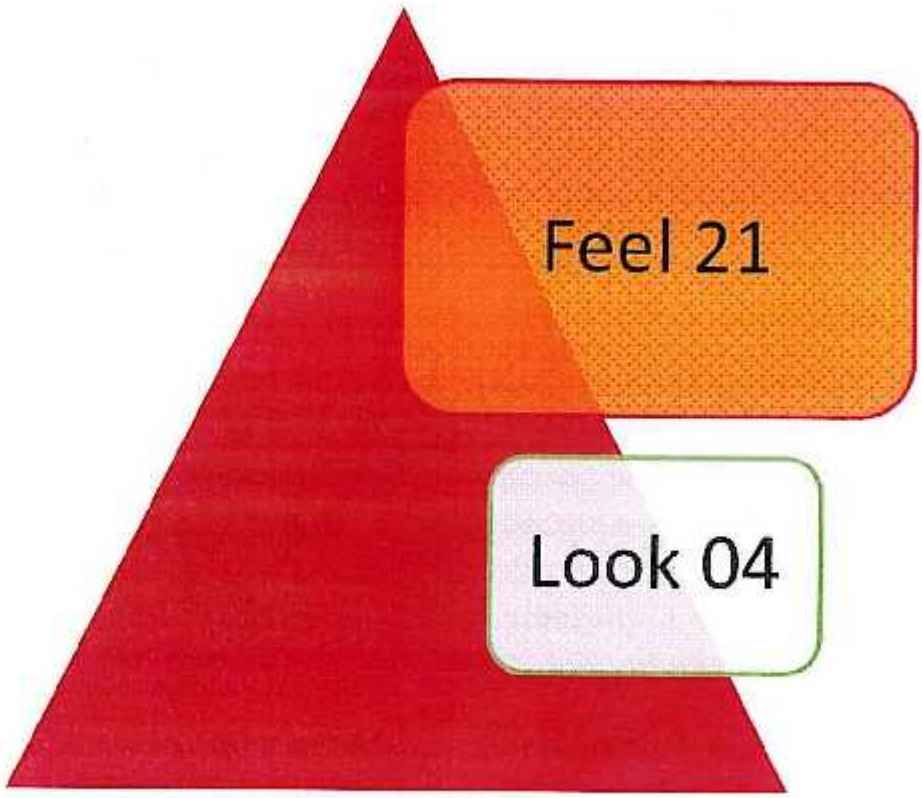
19

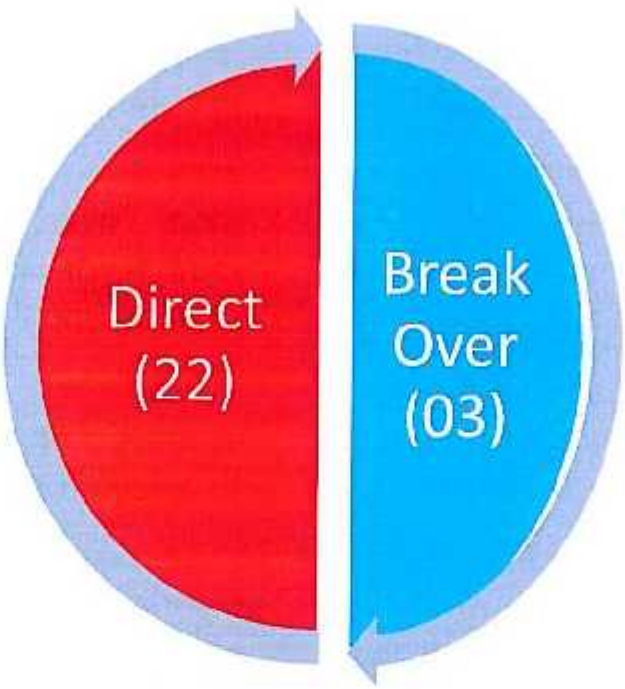
06

Excess Water or habitually



Taken any medication or supplement History of Medical Illness





Smoke, Use Tea, Coffee

Discussion:

Almost everyone on a long flight suffers jet lag to some degree.

In New Zealand survey based on jet lag in cabin crew showed 96% of respondents admitting that they suffered from jet lag despite being accustomed to long haul travel.

Precisely and as per our survey specifically 90% suffered from tiredness after arrival, 80% experienced loss of energy and motivation and 85% reported broken sleep after arrival.

It was observed that the length of the flight was not the critical issue.

The most important single factor was how many time zones are crossed.

Generally, people have more difficulty adjusting to travel from west to east than from east to west.

This is attributed to average natural circadian rhythm cycles of 24-26 hours.

This is because eastward flights actually compresses days into shorter periods taking a person even further from their natural cycle.

In contrast, the westward flights actually expand days to approximate the internal cycle more closely.

Immediate signs and symptoms of jet lag with the circadian rhythm that became our finding include Sleep disruption, Short-term fatigue, Irritability, Loss of appetite and mild Judgment alteration.

It is said that one night of reduced sleep may not lead to great impairment in alertness, but the level of fatigue increases each consecutive night and may serve to explain continuous short haul night flights as most taxing than the long haul flights.

Such impairment and decrease productivity are observed due to fatigue and lack of sleep.

The decline is even more prominent if the worker in addition to fatigue is also experiencing circadian dysrhythmia.

Factors that protrude and projects as jet lag are manier times missed and the mythical symptoms can only be solved by AME (Aviation Medical Examiner) as expert

therefore to act and react on behalf of the sufferer so that health and safety may be maintained in a compulsive aircraft environment that has to be there by all means and manner.

Sleep deprivation:

Air crew sleep is extremely important in commercial Flights operations.

With the given speed and ranges aircrew fatigue is becoming a limiting factor in aircraft operations.

Modern commercial aircraft cross time zones at almost the same rate as the earth rotates, and it is these swift transmeridian transitions that lead to Jet Lag or Rapid Time Zone Change Syndrome.

On arrival at their destination, individuals find themselves out of synchrony with the social environment and time hence under the symphony of jet lag.

Thus resulting in excessive daytime sleepiness; sleep onset insomnia and frequent arousals from sleep, particularly in the latter half of the night.

Following contributory factors are further elaborating the patho physiology of jet lag so that its effect maybe conclusively measured

Gastrointestinal:

Gastro - intestinal discomfort was also a common complain within the survey with episodic constipation.

Cabin crew form an important part of the commercial airlines, they form an important part of the flight crew responsible for flight safety.

As far as the passenger is concerned, commercial passenger comes in contact only with the cabin crew and forms an impression about the airline through this interaction.

Nevertheless Jet Lag degrades attention, short-term memory and ultimate impairment in decision-making.

Frankly the entire job content of cabin crew suffers if they suffer jet lag symptoms.

Therefore it is customary that cabin crew cannot bear and afford to be 'jet lagged' and if at all they present a poor image of the airline.

Psychological Disturbance:

Circadian rhythm disruption has been suggested to play a role in the genesis of depression or in the maintenance of endogenous depression.

Those with endogenous depression or bipolar disorder are prone to greater exacerbations.

IHD:

The exact mechanisms of cardiovascular effects are unclear.

However, blood pressure and pulse follows a circadian rhythm; thus, mechanisms could be related to such rhythms.

Additionally, excessive smoking or substance abuse related to shift work might be culpable.

Diseases with Intrinsic Circadian Variation Diseases with intrinsic circadian variation may be exacerbated by circadian shift.

For example, persons with chronic asthma may experience more symptoms at night because circadian acrophase (i.e., peak occurrence of bronchial reactivity) occurs between 4 and 7 a.m.

Epilepsy requiring medication, coronary artery disease, bronchial asthma, insulin dependent diabetes, hypertension on multiple drugs, recurrent peptic ulcer disease, irritable bowel syndrome and chronic depression may worsen on intrinsic circadian variation

This may perhaps be one of the more important reasons to develop and implement medical standards for cabin crew, along the lines of aircrew medical categories, especially for international airlines.

Increased Accidents And Errors:

There are few studies on the effects of jet lag on task performance.

Other than aviation industry shift workers in hospitals or railways are exposed to similar stress and therefore, these studies are cited in comparison.

Shift work has been associated with increased rates of accident and injury at work.

Night shift nurses have a higher incidence of automobile-related injuries and near accidents while driving to and from work.

Emergency physicians on night shifts were slower at manual tasks and more likely to commit errors as their shifts progressed.

These physicians rated themselves more fatigued, less thoughtful, and more sleep deprived than day shift physicians.

In other groups studied (e.g., truck drivers, air-traffic controllers), a great number of adverse incidents were due to decreased vigilance, lower performance, more fatigue, and higher error rates.

Circadian-related performance decrements can occur in workers even if they are not sleepy.

Micro-sleeps are small bursts of sleepiness that can occur throughout the circadian cycle, allowing a previously alert person suddenly to be subject to severe fatigue, unable to stay awake and have obvious implications for injuries and accidents.

Factors Modulating Adaptation Various factors modulate adaptation to shift work.

Workers who choose shift work for reasons such as pay differential are more likely to adapt more easily.

Difficulties may arise in persons older than 40 years, even if the worker previously tolerated shift work.

These workers are unable to synchronize their internal circadian rhythms with a imposed external environment, resulting in GI complaints, interpersonal relationship difficulties, drug and alcohol problems, decreased job performance, and increased accident rates.

Method to reduce Jet lag symptoms:

Following Methods are empirically used to avoid jet lag or reduce its severity

(a) Pre-flight Preparation:

This is one of the most important aspects of combating jet lag.

Ensure a good night's rest and avoid stress, excitement or worry and fatigue from a function, the night before.

Get plenty of exercise in the days prior to departure and try to avoid sickness such as flu, cold and so on.

(b)Exercise and Good Sleep Hygiene:

The data on exercise are conflicting.

While exercise increases energy and improves mood, it probably does not play a major role in resetting the body's biological clock.

Some research suggests that moderate physical training leads to an increase in sleep length and night time alertness.

Some recommend moderate physical exercise a few hours before the main sleep period; others recommend aerobic exercise immediately after awakening.

(c)Drug Therapy for Jet Lag:

The two main approaches for pharmacological treatment of jet lag are;

(a) the promotion of sleep with hypnotics and

(b)the resynchronization of the internal body clock.

The latter is achieved by timed administration of Melatonin

Melatonin:

Melatonin In humans, plasma levels are high at night and low in daytime.

Melatonin delays the circadian rhythms when administered in the morning and advances them when given in the late afternoon / evening.

Melatonin also acts as a mild hypnotic.

Its principal aeromedical application has been in the experimental treatment of jetlag

effects.

For aircraft passengers, melatonin administration at destination bedtime appears to improve sleep quality and to decrease the time required to re-establish normal circadian rhythms.

However, for international aircrew who travel through multiple time zones without time to adapt to new environments, taking melatonin before arriving home may further impair already disturbed circadian rhythms .

Zolpidem:

Zolpidemis an imidazopyridine, structurally unrelated to the benzodizapines, has a short half-life, rapid absorption and a strong hypnotic effect with weak anticonvulsant and muscle relaxant properties.

It has minimal next-day effects (hangover) when given at recommended doses.

This factor is important for cockpit crews, who have to be mentally alert the next day, to operate the flight.

Zolpidem is indicated for short and fast acting resynchronization of the circadian rhythms .

Melatonin- Zolpidem combination is poorly tolerated subjectively perhaps because of the hangover effect due to the additive hypnotic effect of the drugs .

There are no fixed drug regimes or measures to avoid jet lag.

In our opinion and as finding suggest jet lag is more of a personal preference, measures that the passenger or crew are most comfortable with.

Conclusion:

24-hour continous flight operations creates altered work schedules that can lead to Jet Lag and Cabin Crew cumulative sleep loss with circadian disruption.

Light meal taken during flight schedule have decrease incidence on effect of Jetlag with 23/25 subjects counseling light meal as an effective tool to combat jet lag.

Fatigue seems to be the most observed phenomenon being found in 18/25 subjects.

Lethargy and heavy headedness falls thereafter being observed in 8/25 subjects.

Irritability among 6/25 followed by depression 4/25 and headache in 3/25 subjects as least dominant.

These factors can lead to fatigue and effect productivity and performance on job.

22/25 experience sleep disorder during long haul flights where as 15/25 have inability to adjust body and circadian in different time zones.

Travelling to a time zone more than 3 hours different to which they are accustomed, frequently experience extreme fatigue, somnolence and disordered sleeping patterns.

Cabin members are responsible for flight safety and are the 'official' publicity managers of the airline.

Round-the clock aviation operations pose challenges and the psycho- physiological requirements related to sleep; the internal circadian clock, and human fatigue that are critical factors known to affect safety, performance, and productivity.

Flight crew capabilities and limitations is an important aspect to address as long as global demand for aviation continues to increase.

22/25 subjects were found physically fit with balance diet and to some extent sleep regularity.

Flight Time Duty Limitations for aircrew is a guideline to formulate the working schedule for cabin crew.

5/25 found to have impaired ability to concentrate when exposed to phenomena of jet lag.

Local variations need to be taken into account, e.g. continuous three nights short-haul flights may be more taxing than long haul trans-oceanic flights, due to lack of quality sleep at night.

22/25 claim direction of travel as a important part of jet lag phenomena.

Most dominant disturbance in circadian cycle were observed in west bound flight with22/25 in west bound and 3/25 in east bound schedule.

3/25 subjects claim palpitation due

to lack of sleep/anxeity related to tough shedule.

Noticeable symptoms of jet lag were found in 14/25 subject with sleep deprivation in 07/25 subjects.

Boredom due to monotonous routine along with tense cabin environment had effect on 10 /25 subjects whom claim to travel more than 3 time zones as frequent flyer.

The age group, local conditions, flight departure times, service conditions medical disability of the aircrew must be taken into account before formulating schedules for aircrew.

04/25 subjects have medical illness like diabetes, heart and lung diseases.

Disabilities and medication schedule need to be taken in to account before rostering.

Most crew members in this regard were 16/25 below 40 years of age and 09/25 above 40 years that explain less dominating symptom of jet lag among crew.

The higher age group of the cabin crew also makes it difficult to adjust to the new time zones, reducing the efficiency and work output.

05/25 subjects were found occasional alcohol consumer with no habitual tendency .

Hydartion among cabin members claim to be one of the main counterfeit mechanism to fight jet lag aftereffects and 21/25 claimed to take excess water during long haul flights.

The need of time is to set up and regulate the flying duties for cabin crew in accordance with their medical conditions thereby Categorizing the cabin crew, in accordance with their disability and work output.

Most crew members urge that its the feel that is mportant in flight and not the look that prevents lethargy taking them to 21/25 as sdominant opinion.

Education and training module on jet lag management of flight operations is mandatory.

Short acting hypnotics are helpful in adjusting to the new time zone.

08/25 were found to take medication and supplements to fight sleep discrepancies.

Most members of the cabin were found to be smoker, with caffeinated product as most used in flight object taking users to 19/25 among subjects. .

There is a need to develop and implement medical standards for cabin crew as per medical categories.

References:

- 1. Suhner A, Hofer I et al. Effect & tolerability of Melatonin & Zolpidem for Alleviation of jet Lag. Av Space & Env Med 2001; 72; 638-646.
- 2. Winget CM, De Rosha CW et al. Review of Human psychological & performance changes associated with desynchronosis of bio rhythms. Av Space & Env Med 1984; 55: 1085-96.
- 3. Wright JE, Vogel JA et al. Effect of travel across time zones (Jet Lag) on exercise capacity & performance. Av Space & Env Med 1983; 54: 132-37.
- 4. Judith Green-MCKenzie, MD, MPH, Amy J Behrman, MD et al. Circadian rhythms and emergency medicine practice eMedicine journal. May 23 2001; Volume 2: Number 5.
- 5. Gander, P.H., Gregory, K.B., Miller, D.L., Graeber, R.C., Connell L.J., Rosekind, M.R. Flight crew fatigue V. Long haul air transport operations. Aviation, Space, and Environmental Medicine, 1998 ; 69, suppl 9, Section II: B37-B48.
- 6. Luna TD, French J, Mitcha JL. A study of USAF air traffic controller shift work: sleep, fatigue, activity, and mood analyses. Aviat Space Environ Med 1997 Jan; 68(1): 18-23
- 7. Cabon P, Coblentz A, Mollard R: Human vigilance in railway and long haul flight operations. Ergonomics 1993; 36(9): 1019-33.
- 8. Mark R Rosekind et al Fatigue in Operational Setting; Examples from the Aviation Environment; Human Factors 1994; 36(2): 327-338.
- 9. Morgan TO, Anderson A. Different drug classes have variable effects on blood pressure depending on the time of day. Am J Hypertens 2003 Jan; 16(1): 46-50.
- 10. Sanders DC, Chaturvedi AK, Hordinsky JR. Melatonin: Aeromedical, Toxicopharmacological And Analytical Aspects. J Anal Toxicol 1999 May; 23(3): 159-167.
- 11. Gold DR, Rogacz S, Bock N. Rotating shift work, sleep, and accidents related to sleepiness in hospital nurses. Am J Public Health 1992 Jul; 82(7): 1011-4.
- 12. IJASM 2004; 48(1): 10-14
- 13 Ind J Aerospace Med 48(1), 200412

Questionnaire

Name :___NA/ Not Applicable)_____

Sex: 18 males and 07 females

Weight: 75 to 95 kG. approximately

Age: below :40 : 16
above : 40: 09

1: What is you likely Age ?

(a)less than 40/.....16....

(b)more than 40/....09.....

2: What sort of meal do you take in long haul flights

(a)Light.....23

(c) Normal.....02

3: Have you ever felt headache, irritability, lethargy, heavy headedness depression or fatigue during your flight on different time zones?

(a)Headache_____3

(b) irritability_____6

(c) lethargy_____8

(d)heavy headedness_____8

(e)depression_____4

(f) fatigue _____18

4: Do you think you are physically fit, rest properly and eat a balanced diet?

(a) (yes)_____22

(b) (No)_____03

5: Do u feel inability to adjust your body while traveling in different time zone on long haul flight?

(a) (yes)_____15

(b) (No)_____10

6: Do you experience specific sleep disorder during long haul flights & across different time Zone ?

(a) (yes)_____22

(b) (No)_____03

7: Do you feel fatigue and disruption of internal body clock while on long haul flights across time Zone ?

(a) (yes)_____22

(b) (No)_____03

8: Do you ever experienced impaired ability to concentrate while on or later on long haul flight and at different time zone?

(a) (yes)_____05

(b) (No)_____20

9: Have you ever feel changed in schedule of normal bathroom(bowel) habits causing diarrhea or constipation while on long haul flights and in different time zone?

(a) (yes)_____19

(b) (No)_____6

9(a); Do you think the direction of travel matters like flying from north to south or vice versa so to keep body in normal circadian cycle of biological clock like from bowel activity to other incapacity as fatigue or insomnia?

(a) (yes)_____22

(b) (No)_____03

9(b); If yes which direction and travel causes more disturbances in circadian rhythm like east bound or west bound?

(a) East Bound--------3

(b) west Bound----------22

(c)South bound-----1

(d)North bound---nil

10: Have you ever experienced anxiety, sweating, coordination problem , dizziness or forgetfulness ?

(a) (yes)_____07

(b) (No)_____18

11: Have you ever felt heart beat irregularities or frequent episodes of illnesses like fever?

(a) (yes) _____03

(b) (No)_____22

12: Have you ever perceived noticeable symptoms related to jetlag with more intense symptoms when you cross more than three time zone ?
(a) (yes)_____14

(b) (No)_____11

13: Do you travel in different time zone frequently ?

(a) (yes)_____22

(b) (No)_____03

14: What are your sleep habits do you think you suffer sleep deprivation?

(a) (yes)____07

(b) (No)_____18

15: Do you ever feel boredom due to monotonous routine or cramping due to seating, high altitude or cabin pressure impact?

(a) (yes)_____10

(b) (No)_____15

16: Do you drink occasionally ,at leisure ,friendly or habitually?

(a) (yes)____05

(b) (No)_____20

17: Do you drink excess water on flight or not ?

(a) (yes)_____21

(b) (No)_____04

18: Have you ever taken any medication or supplement to over come your sleep discrepancies' on long haul flights to restore normal sleep pattern?

(a) (yes)_____08

(b) (No)_____17

19: Do you have any history of medical illnesses like diabetes, heart & lung diseases?

(a) (yes)____04

(b) (No)_____21

20: Do you smoke ,use tea, coffee or similar caffeinated product?

(a) (yes)_____19

(b) (No)_____06

21: What flight do you prefer during long haul travel , a flight that gives you break over in destination or a direct flight or short flights?

(a)Break over_____03

(b)Direct_____22

22: What do you think is more important on long haul flight. How you feel or how you look?

(a) Feel_____21

(b) Look_____04