DRIVING UNDER THE INFLUENCE - PRESCRIPTION DRUGS THE DROWSY FACTOR

Lifestyles and Attitudes

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Summary

Prescription medications, and many over-the-counter (OTC) sleep aids and cold remedies use antihistamines, which induce drowsiness. These preparations have properties to aid pain and work as decongestants, however, the medications identified also have side effects which can be detrimental to performance e.g. drowsiness. Many of the prescription medications will stipulate on the label if they contain any drugs that cause drowsiness. The medication will also instruct users if the content effects driving or operation of machinery. Your General Practitioner (GP) will highlight any side effects and indicate clearly how these will have effect, such as, drowsy feeling, nausea, dizziness, fatigue – all of which will decrease alertness. These warnings (identified by the British National Formulary BNF Edition 46 September 2003 as 2, 3 and 19) must be adhered to and received with seriousness.

Smith highlights that something as simple and common as ‘flu’ or a cold can and will induce sleepiness or fatigue, therefore deteriorating driving and perishing overall performance. It is true that a majority of people would never contemplate driving under the influence of alcohol, however driving when drowsy seems to be no big deal. In the past decades medicines have been a major force in the fight against disease and most of us have consumed some form of medicine to treat an illness. The range of medicines at our disposal has never been greater than today. Many people are prescribed medicines as a result of a visit to or duration in hospital and information can be easily forgotten. Information on the effects of medications is of utmost importance especially if drowsiness is a side effect and ultimately increases your risk of being involved in a sleep-related accident/collision.

Keywords: *Accidents; driver performance; fatigue warning labels; over-the-counter medication; prescription drugs; sleep induction*

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Introduction

Road traffic injury accidents are a daily occurrence and are responsible for a vast number of deaths and serious injury in each society. The Global Burden of Disease study estimated traffic injury to be the ninth leading cause of death and disability in the world in 1990, and it projected that it would be the third leading cause by 2020 (Murray, 1997). Many causes and contributing factors of road traffic injury accidents have been identified, such as drink, drugs, use of mobile phones and speed. However, major reviews and in depth research have suggested that *fatigue* or *sleepiness* in drivers of cars or other road vehicles dramatically increases accident risk.

As research has proved fatigue related crashes have many of the characteristics of drink related accidents e.g. inability to brake or swerve until it is too late. Despite their similarities, fatigue has not been considered with equal concern. It must be said however, that fatigue is considerably more difficult to identify or measure; there is no device available to police officers that detects fatigue of a driver. Driver fatigue has particularly injurious consequences because of its ability to impair drivers from making critical, sound, spilt-second and in many cases life-saving decisions, such as swerving or braking.

Evidently there is a problem relating poor sleep habits to below average driver performance. The fact remains that NI is a relatively small area of 5,500 square miles (about the size of Yorkshire) with approximately 1,688,600 inhabitants, of which on average 150 people each year are killed as a result of a road traffic accident. Fatigue is an up and coming problem as NI moves ever closer to becoming a 24-hour society. Sleep for many is becoming less of a priority and hectic work schedules and over active social lives are taking over. Not only is individual health deteriorating but for the population who drive this is becoming a death weapon on our roads. Road Safety is stressed constantly and at the highest level, fatigue is a new phenomenon and is one that is not going away as it grows steadily affecting everyone.

Drugs

One of the most common and also most dangerous examples of drug abuse occurs when people mix alcohol with prescription medication, over-the-counter drugs or illegal drugs. This can occur without intent on the persons behave, nevertheless the consequences if they take to driving under the influence of this deadly cocktail can be fatal for themselves and others.

The researchers' own study showed how a non-prescribed OTC influenza medication had major effects on driving performance, when taken on its own – without mixing with alcohol. If your General Practitioner (GP) prescribes tablets or medicines, ask how long the drug will affect your ability to drive safely. Non-prescribed, OTC drugs such as cold tablets, cough mixtures etc may contain antihistamines, codeine and even alcohol that prove especially

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dangerous for drivers. This information can be found on the label with warnings such as ‘may cause drowsiness’ and ‘do not operate machinery’.

Methodology

This research was conducted in two parts; Part one consisted of volunteers consuming an over-the-counter medication (Night Nurse Influenza Medication) and then partaking in preset performance driving. Part two contained more quantitative research of questionnaire surveys – this part of the research is ongoing.

Part One

Driving whilst consuming prescription drugs can be as potentially dangerous as illicit drugs and is a road safety threat. Many people consume prescribed medication and are unaware of the effects these have on their ability to drive.

Method

This study demonstrates that driving while sleepy or whilst under the influence of a non-prescribed influenza medication, driving performance is altered and drivers are not of their usual standard. Driving ability declines and this is then when accidents occur.

As part of the study, the author studied and tested 7 healthy adult drivers to ascertain changes in reaction times and driving performance when they were sleep-deprived, ‘normal’ and after they had taken ‘night nurse’.

During all tests the participants were tested together and drove a Peugeot 106 and the course for all tests remained unchanged. During the tests the individual was asked to perform test 1 to 4 and these were judged and recorded by their reaction accordingly. All conditions were invariable and maintained universal from driver to driver.

Drivers Characteristics

The average age range of the drivers who took part in the pilot study was 17-25, with on average 8.6 years driving experience. From this group only 2 drivers were accident free in the last five years, with each of the other drivers experiencing one accident in this time period.
In the overall questionnaire study the average age range was 26-35, with on average 16.7 years driving experience. An amazing 74.5% of this group claimed to be accident free in the past five years, 15.9% being involved in one

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accident and the remaining 7.6% and 2% being involved in two and three accidents respectively.

Results

For the purpose of this paper only 'normal' test conditions and OTC medication test conditions will be discussed. Sleep deprivation tests results have been omitted.

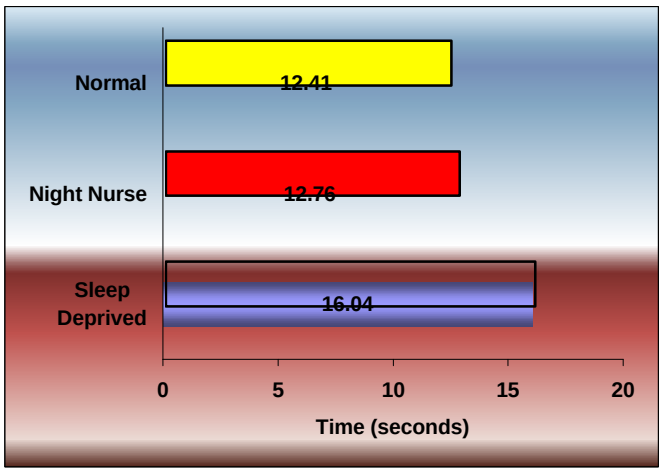
This study found that driving standards for most of the sample group whilst under the influence of 'Night Nurse' influenza medication deteriorated marginally compared to that of the 'normal' driving conditions test.

Tests show that for each of the sample group signs of poorer driving aptitude were experienced as the tests were conducted respectively:

1) Normal, and
2) Under influence of 'Night Nurse' influenza medication.

The performance study indicates that overall participants were poorer during the OTC medication tests and performance was much better and safer during 'normal' conditions. Reiterating and proving that fatigue inducing medication, even something as innocent as an OTC cough mixture can deteriorate driving standards. However in depth analysis of the pilot tests shows how some drivers were much more poorer than others. Different drivers were poorer at different tasks and the same drivers were poor at every test – each experienced difficulty and performed poorly. One common denominator is that all experienced diminished driving standards under the night nurse conditions and performed better throughout 'normal' conditions.

Figure1 Four-Cone Test



The overall aim of the 4 cone test was to monitor reaction times and the ability to cope with potential hazards. Each volunteer was asked to drive through the cones, when signalled to do so, as quickly as possible but without hitting any cones. A start and finish line was visible to the driver and he/she was timed from one line to the other. Also recorded was the number of cones hit on course.

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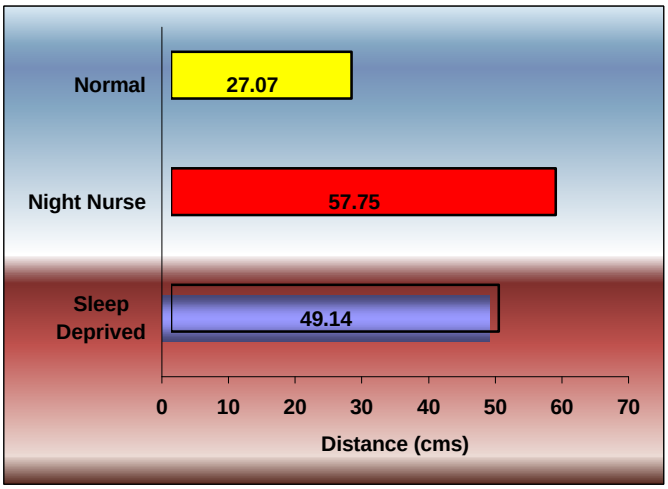
This test showed on average that all participants performed better under normal conditions. Performance diminished during the night nurse test and during the sleep deprived test. As you can see from the graph above normal conditions again provided the best average result, with night nurse coming next and sleep deprivation last.

During the normal test conditions two of the volunteers hit one cone each but were able to continue the course in forward motion. The night nurse test saw three participants hit cones, whilst the sleep deprivation tests came out on top with only one driver hitting two cones. However it could be argued that sleep deprivation study shows less hitting of cones because the drivers were approaching with more caution due to tiredness.

Figure 2 Reverse into Garage Test



This test was aimed at assessing driving capability as the individual was requested to reverse into a garage and adequately position the car but the main objective was to park as close to the back garage wall without hitting it.

These test results contradict the findings of the other tests; 'that sleep deprivation was the worst scenario'. Referring to the graph above it can be noted that normal test conditions were significantly better than both night nurse and sleep deprived conditions. In fact on average the distance reversing into the garage was more than double (30.68cms) under the influence of night nurse. The sleep-deprived test did not experience as significant a distance increase. The average distance between car and wall on reversing into garage whilst sleep-deprived was 49.14cms, an increase of 22.07cms when compared to normal conditions.

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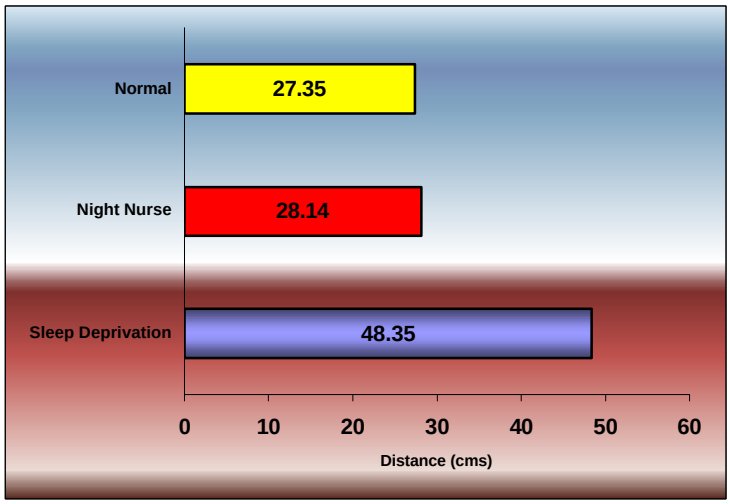
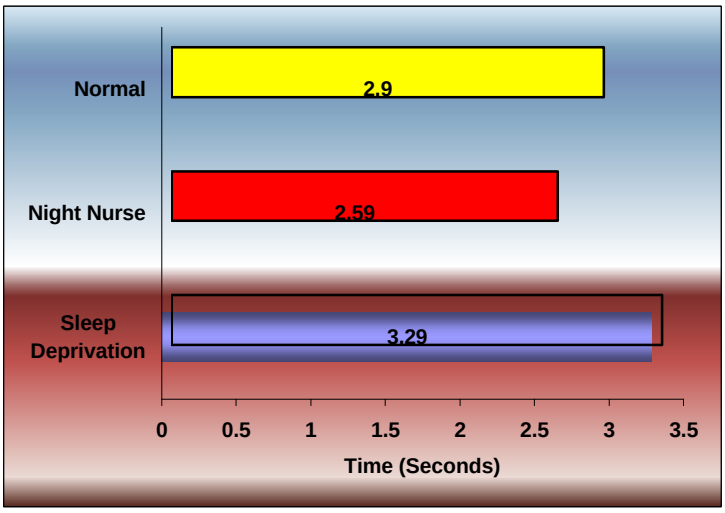
Figure 3 Stop at Wall Test



The stop at wall test was conducted as the participant approached (forwards) a wall at approximately 20mph. They were required to stop as close to the wall as possible without hitting it. The distance in centimeters, between the front of the car and the wall, was measured and recorded.

Figure 4 Average Stopping Time at 30 mph

Results found that on average participants were best when normal. They then experienced a slight deterioration when participating in the night nurse study and a more notable decline in driving performance was experienced during the sleep deprivation tests. On average participants approached the wall and stopped 21cms closer to it under normal conditions than when sleep-deprived. There was a minimal difference, 0.79cms, between normal and night nurse studies.



The emergency stop test while travelling at 30mph the driver received a prior agreed signal and at that point performed an emergency stop; this action was timed. As shown in Graph 1 below, when deprived of sleep the sample group on average took longer to stop than under normal conditions and after

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consuming night nurse medication. On average the sample group were 0.39 seconds faster when normal compared to when sleep deprived. Surprisingly after consuming night nurse medication brake reaction times were 'faster' than normal by 0.31 seconds. However night nurse reaction time was still better than sleep deprived, stopping 0.7 seconds quicker.

Table 1 Pilot group results from driving test and questionnaire

Driver	Driving Experience (years)	Pilot Performance Tests (overall)	Epworth Total*	Sleep IQ	Nature (dozy/alert)	Feel Drowsy when Driving
1	7	Poor	3	Average	Alert	False
2	1	Average	1	Poor	Average	False
3	4	Average	5	Average	Alert	False
4	6	Good	3	Average	Alert	False
5	25	Good	5	Good	Alert	False
6	10	Poor	11*	Average	Average	True
7	7	Poor	17*	Average	Dozy	True

*A score of over 10 is a definite concern for excessive daytime sleepiness

Table 1complies a representation of the pilot group results, which are to be used as a platform for the overall study. On the whole there were two good performers, two average and three poor. The results of these will form the bones of the study and will facilitate to identify the outcome of similar drivers via the questionnaire.

Conclusion

This study concludes drivers who are consuming over-the-counter medications put to especially dangerous risks whilst driving; risks that could ultimately kill them or other road users. These risks could be lessened or alleviated by further educational programmes, to help support drivers who are at danger and to educate all to the risks of drowsiness and how this effects ability to drive. Awareness is especially important as it allows all drivers to act promptly and without pressure.

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Part Two

After intense research and literature reviewing, questionnaires were designed and conducted over a 6-month period. The questionnaires were conducted in a pharmaceutical setting. Candidates were selected according to their prescribed medication – any drug with BNF warning label 2, 3 and 19 indicating 'drowsiness' as a side effect and subsequently these people were approached and asked to partake in the study. As an indicator of daytime sleepiness the Epworth Sleepiness Scale was used to derive levels of excessive sleepiness.

Questionnaire Design

The questionnaire used consisted of 2 main parts. Each part could be analysed independently and then cross-tabulated with each other. Section one simply asked about sex, occupation, average nightly sleep, driving experience etc. It aimed to gain an illustration of each driver's personality, daily routine, driving history and medicinal intake. Section one was essential to depict individual habits and induced fatigue and for these to be grouped.
Section two, consisted of the Epworth Sleepiness Scale (John, 1995), which gives a simple measure of excessive daytime sleepiness. It is brief, user friendly and simply asks the interviewee to rate their chances (on a scale 0-3) of dozing or falling asleep in eight different situations.

Epworth Sleepiness Scale

In contrast to feeling tired, how likely are you to doze off or fall asleep – even for a spilt second, in the following situations? (Even if you have not done some of these things recently, try to work out how they would have affected you).

Use the following scale to choose the most appropriate number for each situation.

0 = Would never doze
1 = Slight chance of dozing
2 = Moderate chance of dozing
3 = High chance of dozing

Situation	**Chance of Dozing**
Sitting & Reading	_____
Watching TV	_____
Sitting inactive in a public area (i.e. theatre)	_____
As a passenger for an hour without a break	_____
Lying down to rest in the afternoon	_____
Sitting and talking to someone	_____

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Sitting quietly after lunch without alcohol _____
In a car, while stopping for a few minutes of traffic _____

Each participant can have a total score between 0 and 24; depending on how likely they would be to doze under the above circumstances. A score of 10 or greater is said to be a cause for concern as it indicates significant daytime sleepiness. A score below 10 is not a concern for daytime sleepiness.

PROCESS

Design

The desired target group was redefined to obtain a practical group to be surveyed. It was impossible to move forward with a target group of 'drivers' the vast amount of them even in Northern Ireland was excessive. Therefore the following definition was formed for the targeted population:

1) *All drivers who consume prescription drugs with BNF 2, 3 and 19,*
2) *Who hold a full current UK drivers licence,*
3) *In Northern Ireland, and*
4) *During February to April 2004*

Results

This paper proves that drivers are put at risk of accident involvement as a result of their consumption of prescription medications. Results confirmed that these drivers are a high-risk group as sleepiness can capture them at the most inappropriate times. Pilot study shows that 1 in 3 drivers have concern for excessive daytime sleepiness and 1 in 4 are not receiving their recommended nighttime sleep. These have serious repercussions especially when the persons commits to the driving task.

Prescriptions Dispensed in NI

There are around 24.3 million items dispensed annually in Northern Ireland.
More than 40% of adults living in their own homes report taking prescription medicine. Adults are consuming on average 2.3 medicines each. On average 120,000 people (9% of the population) across NI visit their local pharmacist on a daily basis.

Conclusion

This investigation concludes drivers who are consuming prescription drugs with BNF warning labels 2, 3 and 19 are put to especially dangerous risks whilst driving; risks that could ultimately kill them or other road users. There are a

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high percentage of drivers in NI consuming drugs with drowsy factors, such as antihistamines, sedatives, tranquillisers and anti-depressants.

Driving under the influence of illegal drugs is highly publicised in the news and is a threat on our roads. However, driving whilst consuming prescribed drugs can be as potentially dangerous. Many of the population take prescription drugs for lots of reasons, ranging from blood pressure to decongestant unaware of the effects these have on their ability to perform the driving task with 100% alertness, as many of these drugs contain sleep-inducing qualities.

Driving whilst consuming prescription drugs can be as potentially dangerous as illicit drugs and is a road safety threat. Many people consume prescribed medication and are unaware of the effects these have on their ability to drive.

These drivers are at utmost danger due to the need to consume fatigue induce prescription drugs for their medical condition/illness.
Prescription drugs sample was extremely important as you cannot take people off their prescription drugs but what can be corrected are other problems, for example, lack of sleep – educate them on the dangers of not receiving enough sleep and what to do if they did not sleep well enough to drive.

Further Work

Part two of this particular research is currently ongoing and is due to be complete in the very near future. Throughout this study it was suggested many times about the possibility of investigating illicit drugs and their use and effect when driving. The PSNI have identified that one quarter of all road traffic fatalities (over a 4 year period) had shown some indication of drugs in the body.

Drug driving is a new concept among many drivers, however it is growing, both rapidly and out of control. It is thought of as an addition to drinking and driving.
New techniques to monitor and detect the influence of drugs on a roadside check are in the development stages. Drivers remain the main cause of accidents when under the influence of drugs nevertheless other road users can be the causation. Young people remain particularly vulnerable to the threat of alcohol and other drugs, not only from impairing their own driving but from getting into a vehicle with other drivers who are under the influence of drink / drugs. The consumption of alcohol or drugs can be extended to motorcyclists and pedestrians who are also guilty of causing an accident. There have been many pedestrians killed as a result of alcohol or drug consumption, and then falling out in front of a moving vehicle.

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