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IMPACT AND AWARENESS OF ERGONOMICS AMONG HEALTHCARE STUDENTS

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Abstract

Background

Ergonomics is mainly concerned with interactions of the human body with the surrounding elements of professional setup design. Ergonomics is a science-based discipline. It brings together knowledge from Anatomy and Physiology, Psychology, Engineering, Biomechanics and Statistics. It ensures that the designs complement the strengths and abilities of the people who use them.

Objectives

The aim of the study is to find out the level of awareness and the impact of ergonomics among Healthcare Students and at the same time educating them about the importance of right ergonomics in their academic as well as professional lives.

Methods

A self made survey was conducted in healthcare students of Uttaranchal College of Biomedical sciences & Hospital. Data was collected through Google forms from different healthcare students.With Microsoft Excel 13, data was analyzed using the proper statistical tests.

Result

42% of healthcare students were not aware of ergonomics .54% of students admitted that the pain arising due to bad ergonomics or faulty body posture affects their ADLs, making it a significant response. 44.1% of students showed positive responses on asking about bending or twisting of neck

uncomfortably.It was noted that a major percentage, that is, 64.4% of students disagreed on being comfortable while staying in one posture for longer hours. 40.1% of students positively responded on whether they carry, lift, or move heavy objects, while 39.6% of students responded that they sometimes do.

Conclusion

It was observed that the participating students lacked awareness of ergonomic which lead to absenteeism from classes .Many healthcare students reported that they do experience discomfort or pain, particularly in areas such as the neck, shoulders, and lower back, which we can attribute to poor ergonomic practices. This suggest the need for interventions aimed at educating healthcare students about ergonomics and addressing musculoskeletal discomfort."

Keywords

Ergonomics, Awareness, Healthcare Students, Posture, Work Related Musculoskeletal Disorders, Therapists.

INTRODUCTION

Ergonomics is the study of combining the demands of the job with the abilities of employees and workplaces to provide the most productive working environment while minimizing the risk of injury. Historically, the main goal of ergonomics has been to reduce the incidence of musculoskeletal disorders (WMSD), but it also includes the efficiency, quality, quantity, and comfort of production workers so that these products are produced in a way that reduces worker injuries ,fatigue/overexertion.In the past, the focus has often been on the physical factors that put people at risk of developing WMSD, but the research is not long-term. It has been shown that there is an interaction between the mental and physical. . The same goes for ergonomics.

Repetitive work, heavy lifting, or prolonged discomfort may increase the risk of work related musculoskeletal disorder. Some of the occupations most at risk include drivers, cleaning and construction, agricultural and healthcare workers. Those most at risk for WMSD in healthcare include surgeons, nurses, physicians, and dentists, and specific recommendations for each are as follows. Now a days Physiotherapy professionals are also having work related musculoskeletal disorders due to carrying patients, being in a prolonged posture to implement some technique or just ignoring their posture while working.Carrying heavy loads or spending long periods of time in an awkward position can increase susceptibility of having WMSD.Work-related musculoskeletal disorders (WMSDs) are work-related disorders and the work environment often contributes to their development or

progression. Most of these are due to physical exertion, repetition and overwork or because of reaching activities, which causes a lot physical syrain & financial losses. WMSD leads absenteeism, reduce productivity, and impact persons quality of life,lead to early retirement, and further increase medical care needs & increase economial burden.Among healthcare professionals, nurses are particularly vulnerable to WMSD due to the physical demands of their job. This involves working a single job or performing individual tasks for long periods of time and meeting the physical needs of many patients during the job. Additionally, special care such as lifting patients, helping them walk, and repeating physically demanding activities such as bending, twisting, or other restraints can lead to WMSD, mostly in the back and neck and less frequently. along the shoulders and along the lower back as suggested in research literature. Studies have shown a significant relationship between work and musculoskeletal diseases in one part of the body.Therefore, to reduce the incidence of musculoskeletal injuries in the workplace, healthcare professionals need to improve their knowledge of ergonomics and make appropriate changes in the workplace, which requires training. According to a previous online survey, the prevalence of musculoskeletal pain among physical therapists ranges from 55% to 91% and is a significant part of physical therapist failure to attend school, with major consequences for production and business. Physiotherapists can also be patients, as shown by Nordin and Obembe.

The high prevalence, severity and response of WMSD among physiotherapists are the main points of previous studies and this study relied on surveys to investigate the characteristics of WMSD in physiotherapists. It has been shown that objective ergonomic evaluation identifies underlying musculoskeletal disorders and we conducted this survey to ensure that are health care students in our college aware of ergonomics and its impact or Work related musculoskeletal disorders.

We wanted to Explore the awareness healthcare students have regarding ergonomics and potential ergonomic resources in physical therapy that can lead to early intervention, protect musculoskeletal health, increase satisfaction, and ultimately help in increasing productivity & Quality of life.

Methodology

Study Design

Survey

Study Population

Students of final year from various Healthcare Department (Physiotherapy, Nursing Paramedical)

Study Setting

Uttaranchal P.G College of Biomedical Sciences and Hospital, Dehradun, Uttarakhand

Duration of Study

Around 2 weeks

Sampling Technique

Convenience Sampling

Data Collection Procedure

Google Forms

Data Analysis Procedure

It was done using Microsoft Excel. Later, the data was arranged graphically.

1) Do you bend or twist your neck in awkward or uncomfortable way?

2) Do you carry, lift or move heavy objects?

3) Do you carry, lift or move patients?

4) Do you reach or work over your head or away from your body?

5) Do you feel comfortable staying in one posture for long period of time?

6) Do you feel shaky while working due to incorrect posture?

7) Do you have back pain due to improper posture. Eg, bending or cramped posture?

8) Where do you experience the pain most ?

9) Do you often experience such pain in back, neck, shoulder or hands?

10) Do you also feel numbness or tingling in your fingers while working?

11) Do you stop working when pain or discomfort arises?

12) Do you make sure to rest your foot on foot rest or ground while working?

13) Do you consider ergonomics while purchasing work material, tools or equipments?

14) Do you feel any difficulties or muscular strain while working/clinical posting?

15) Do you think information & training about ergonomics will be useful?

16) Are you aware of stretches that can be done in clinical hours /at work?

17) Do you experience pain while performing repetitive movements ?

18) Are you aware with ergonomic injuries?

19) Do you take sufficient break or pause during work/clinical posting?

20) Does pain affect your activity of daily living?

Results

A sample size of 200 was taken among the Healthcare students.

It was observed that only 33.5% of students were aware of the ergonomic injuries but 84.3% of students admitted the fact that the information and training about ergonomics would be useful for them. A big percentage, that is, 55.6% of students have experienced back pain due to any of the improper postures they put themselves in, for example: Bending. In the survey, it was observed that around 43.4% of students sometimes and 40.4% of students for sure experienced pain in their neck, shoulders and hands, apart from their back, because of improper body posture.

Repetitive movements are often a part of people's occupations or the daily routines of the students, in response to which 39.2% of students complained of experiencing pain, while performing those repetitive movements. When enquired about the quality of Activities of Daily Living (ADLs), nearly 54% of students admitted that the pain arising due to bad ergonomics or faulty body posture affects their ADLs, making it a significant response. 44.1% of students showed positive responses on asking about bending or twisting of neck uncomfortably, while 31.2% of students said that they sometimes do so.

It was noted that a major percentage, that is, 64.4% of students disagreed on being comfortable while staying in one posture for longer hours. 40.1% of students positively responded on whether they carry, lift, or move heavy objects, while 39.6% of students responded that they sometimes do. Ergonomics is all about putting less stress on the body while giving an appreciable output. In contrast to this, 33.7% of students responded that they perform their work by overreaching their body, thus giving extra stretch to their muscles.

QUESTIONS	RESPONSE
Awareness of ergonomic injuries	Yes – 33.5% No – 42.5% Maybe - 24%
Will the information and training about ergonomics be useful?	Yes – 84.3% No – 7.1% Sometimes – 8.6%
Experienced back pain due to improper posture?	Yes – 55.6% No – 27.8% Sometimes – 16.7%

Experiencing pain in the neck, hands, or shoulders	Yes – 40.4% No – 16.2% Sometimes – 43.4%
Experiencing pain while performing repetitive movements	Yes – 39.2% No – 29.6% Sometimes – 31.2%
Pain affecting ADLs	Yes – 54% No – 19.5% Sometimes – 26.5%
Bending or twisting the neck in an awkward or uncomfortable way	Yes – 44.1% No – 24.8% Sometimes – 31.2%
Comfortable while staying in one posture for longer hours	Yes – 23.8% No – 64.4% Sometimes – 11.9%
Carry, lift, or move heavy objects	Yes – 40.1% No – 20.3% Sometimes – 39.6%
Working by overreaching actions of the body	Yes – 33.7% No – 33.7% Sometimes – 32.7%

Conclusion

On having a good knowledge of ergonomics, any individual can perform the given work or activity with maximum efficiency, without giving extra stress to the body. This survey helped in gaining knowledge of ergonomics among the students of the healthcare department, which is going to be of great significance once they enter their professional lives.

It was concluded that the level of knowledge regarding ergonomics is not so appreciable among the students. Although many students felt the need for training or information regarding ergonomics, a significant number of students were completely unaware of ergonomic injuries. This fact led the students to perform many inappropriate body movements such as bending or twisting the neck uncomfortably or working by overreaching or carrying heavier objects frequently. Consequently, the students also complained of experiencing undesirable pain in the limbs or trunk.

Various initiatives are needed to help the students gain awareness about ergonomics, its implications, its significance, and how it is linked to the Anatomy and Physiology of our body as well. Conducting this survey itself made the students think or question about how ergonomics play a major role in our personal as well as professional lives.

Review of Literature

1. L.J Fan; S Liu; T.Jin, et al. Studied Ergonomics risk factors and Workrelated Musculo Skeletal Dysfunction in clinical Physiotherapy .
2. Lack of Ergonomic training & poor ergonomic habits during surgery leads to musculoskeletal pain and affects the surgeon life outside of work studied by KA aron , K Vaughan, R Gupta et al(2021)
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Clinical Implications

Ergonomics is an applied science that combines the knowledge of Anatomy, Physiology, Engineering, Statistics, and Biomechanics that assist in designing a workspace that helps give maximum work output without compromising bodily needs and structure.

The application of ergonomics expands from our personal to professional lives. Any type of failure in giving the right ergonomic environment to the body greatly affects the mental as well as the physical health of the individual.

Work-related musculoskeletal disorders are often linked with bad ergonomics. Musculoskeletal injuries more often take place due to repetitive movements of limbs, working by overreaching or staying in one posture for longer hours. All these can sometimes lead to sprain, strain, or tear.

Ergonomically friendly equipment has led to a great reduction in Work-related musculoskeletal disorders.

Surgeons are often subjected to long hours of standing, awkward body positioning, or repetitive use injuries. Various ergonomic adaptations such as maintaining a neutral spine position, taking appropriate micro-breaks, using footrests, and ergonomically friendly equipment such as an adjustable lamp or table, can greatly reduce the risk of injuries in surgeons.

Nurses are subjected to almost the same type of body stresses as surgeons. Implementation of sliding boards, air-assisted transfer mattresses, and supportive footwear are some additional ergonomic adaptions for nurses.

Therapists often involve themselves in lifting and positioning patients, transferring them from one place to another, and bending while giving treatment. Consequently, their bodies are subjected to increased stress which leads to various posture-related or musculoskeletal disorders. Decreased weight handling, frequent micro-breaks, and utilizing power tools are some ergonomic implementations for therapists.

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1) Do you bend or twist your neck in awkward or uncomfortable way?
2) Do you carry, lift or move heavy objects?
3) Do you carry, lift or move patients?
4) Do you reach or work over your head or away from your body?
5) Do you feel comfortable staying in one posture for long period of time?
6) Do you feel shaky while working due to incorrect posture?
7) Do you have back pain due to improper posture. Eg, bending or cramped posture?
8) where do you experience the pain most ?
9) Do you often experience such pain in back, neck, shoulder or hands?
10) Do you also feel numbness or tingling in your fingers while working?
11) Do you stop working when pain or discomfort arises?
12) Do you make sure to rest your foot on foot rest or ground while working? 13) Do you consider ergonomics while purchasing work material, tools or equipments?
14) Do you feel any difficulties or muscular strain while working/clinical posting?
15) Do you think information & training about ergonomics will be useful?
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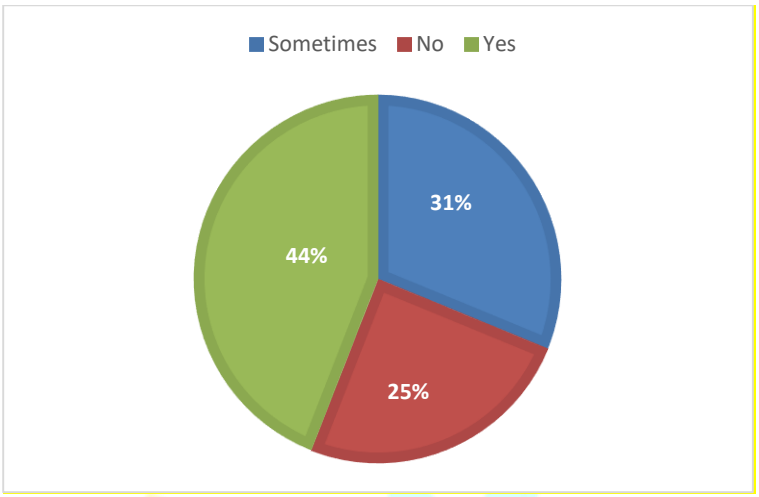
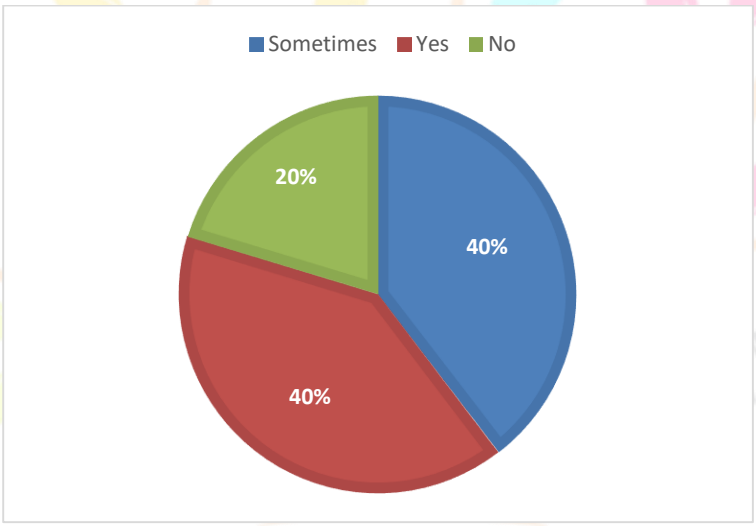


2. Do you carry, lift or move heavy objects?



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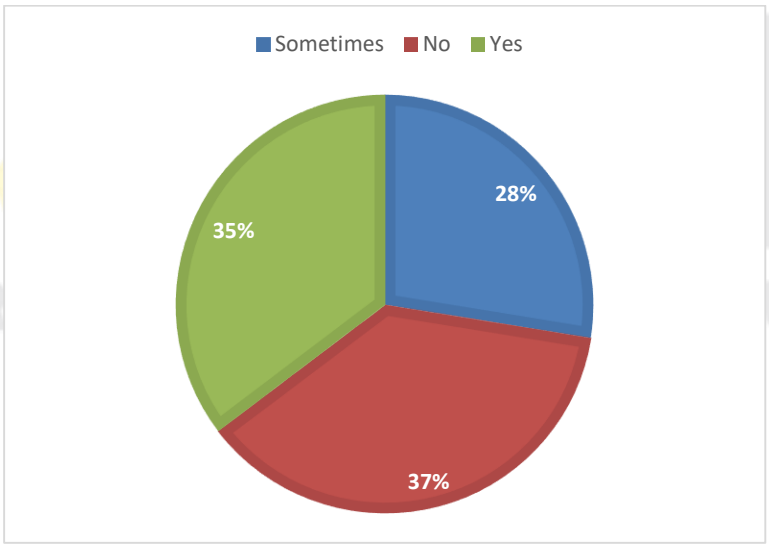
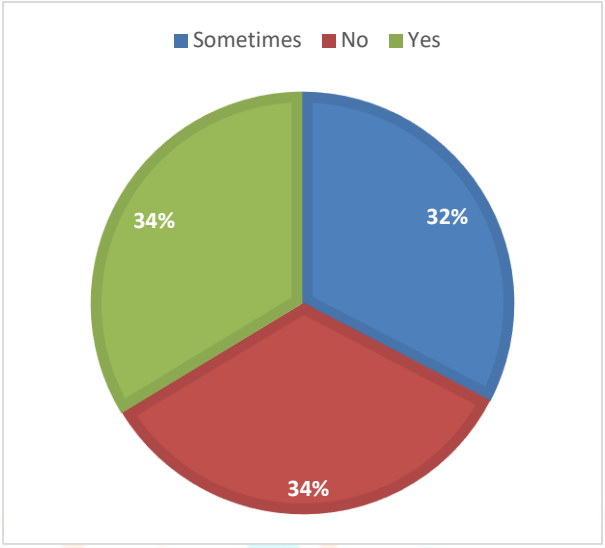
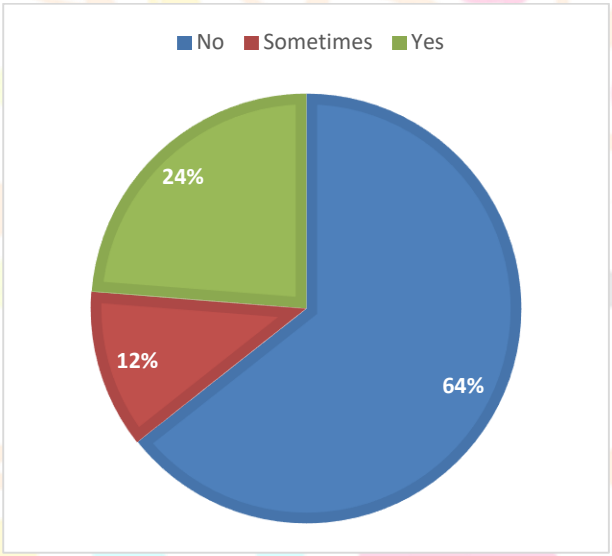


4. Do you reach or work over your head or away from your body?



5. Do you feel comfortable staying in one posture for long period of time?



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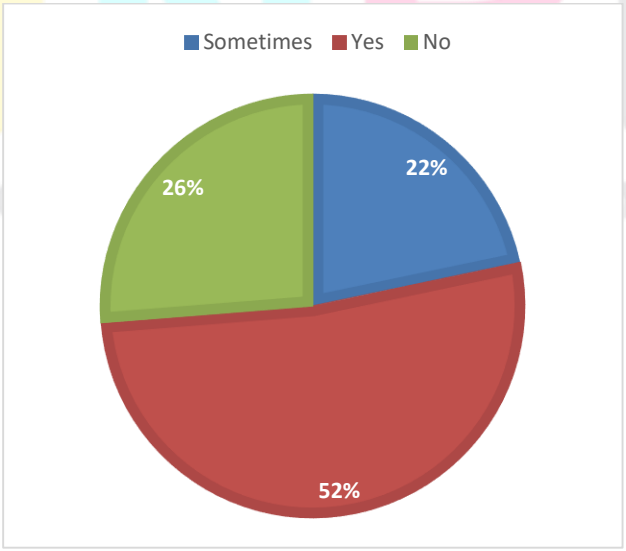
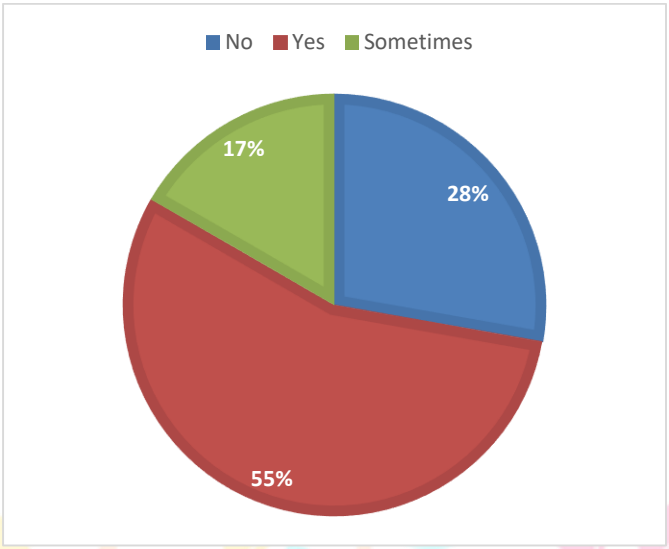
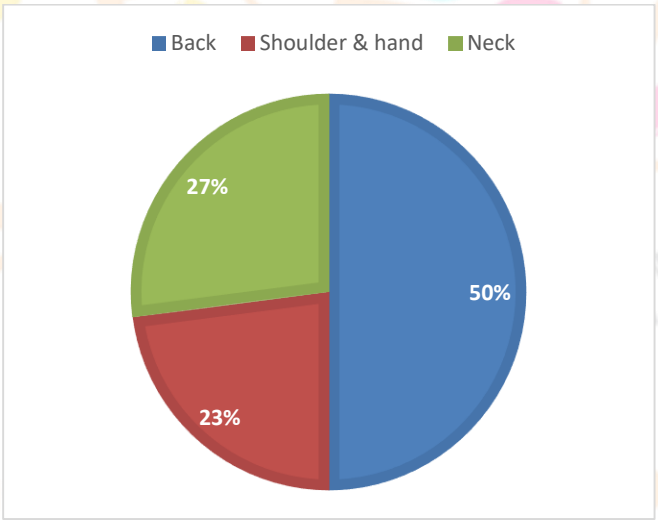


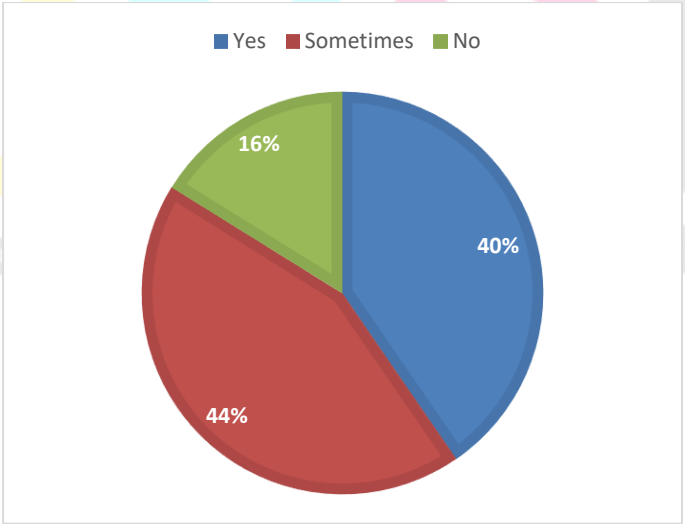
7. Do you have back pain due to improper posture. Eg, bending or cramped posture?



8. Where do you experience the pain most?



9. Do you often experience such pain in back, neck, shoulder or hands?



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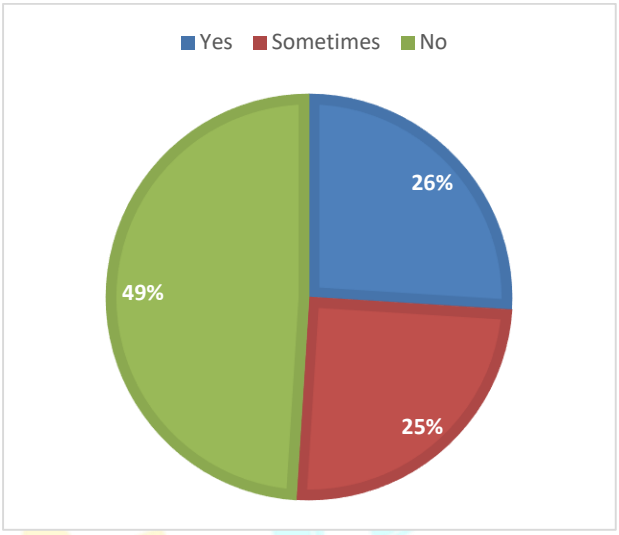

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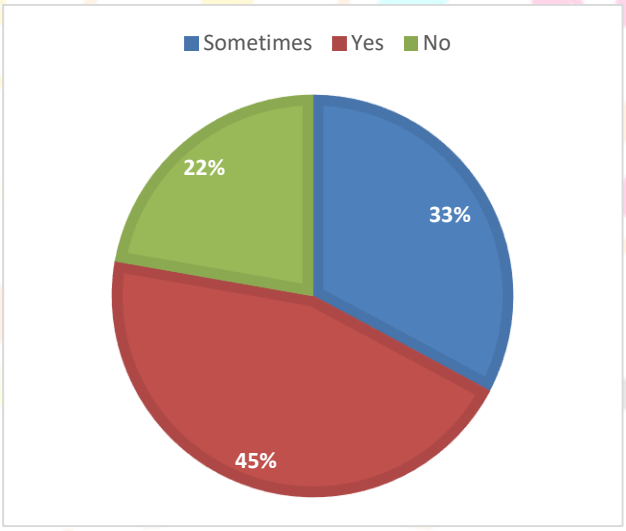

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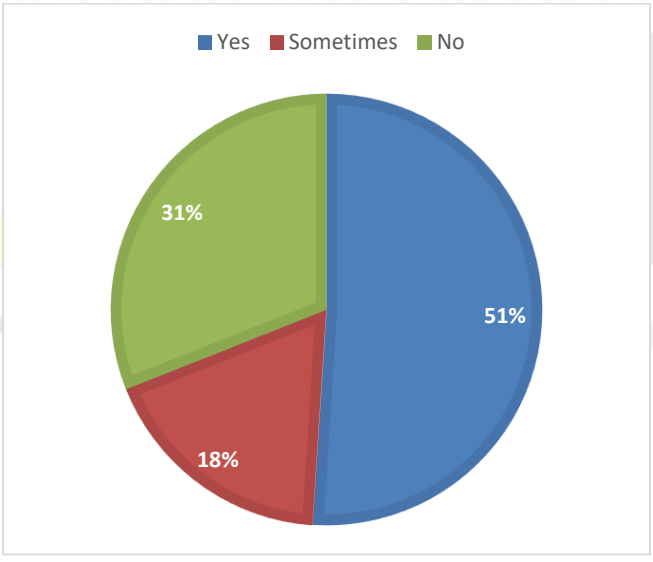

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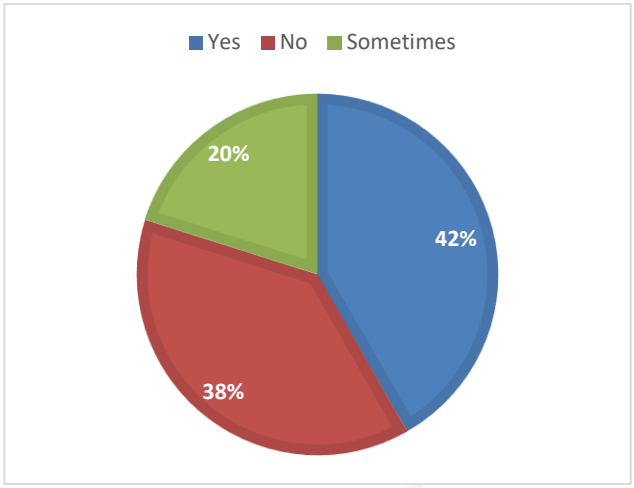

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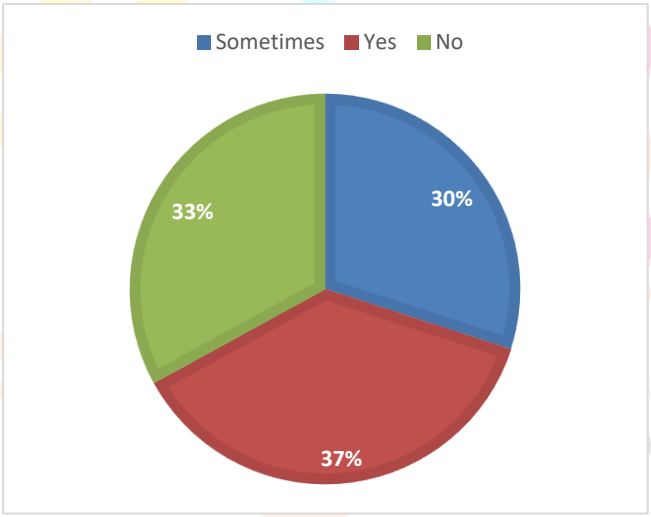

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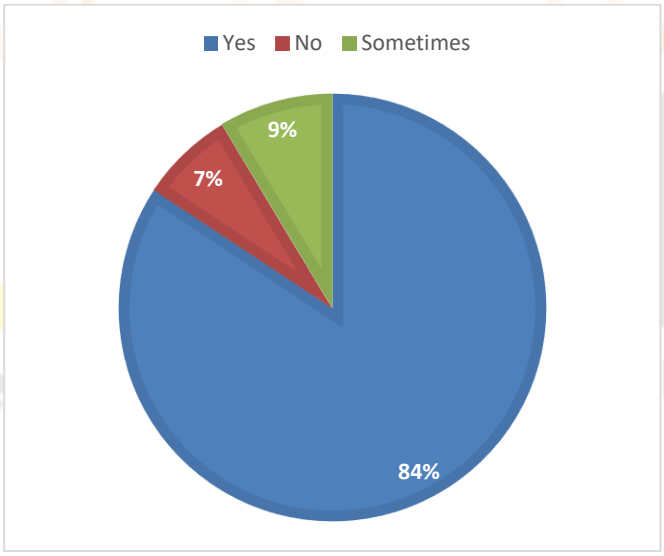

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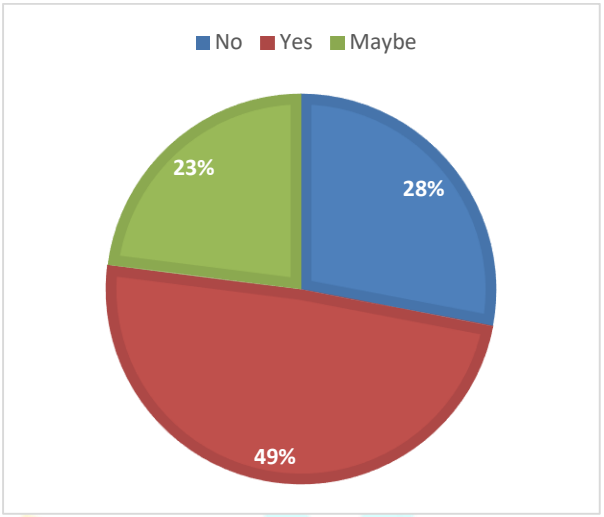

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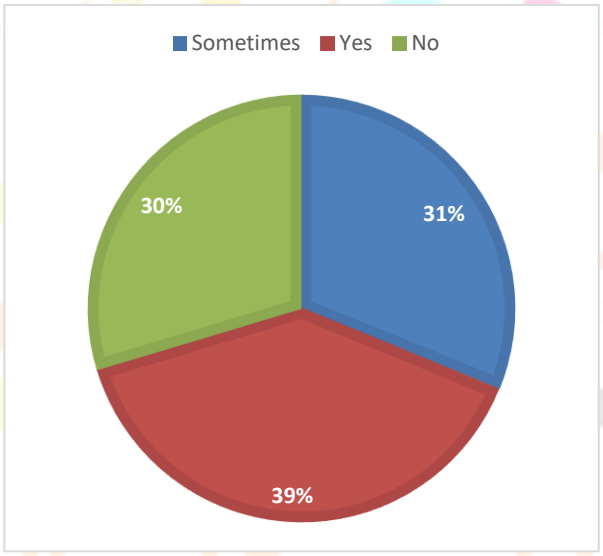

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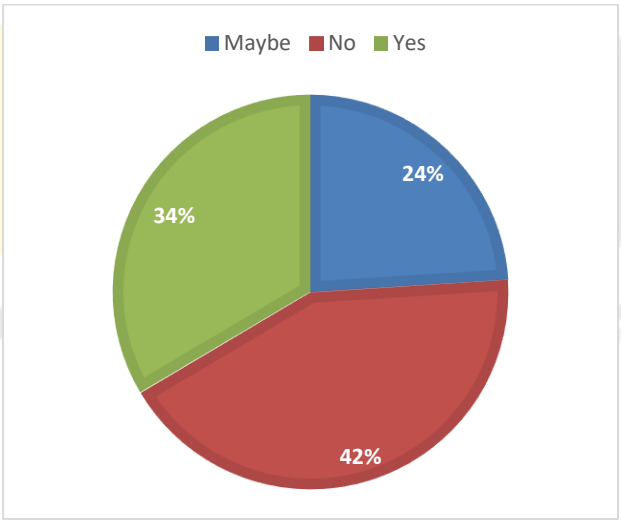

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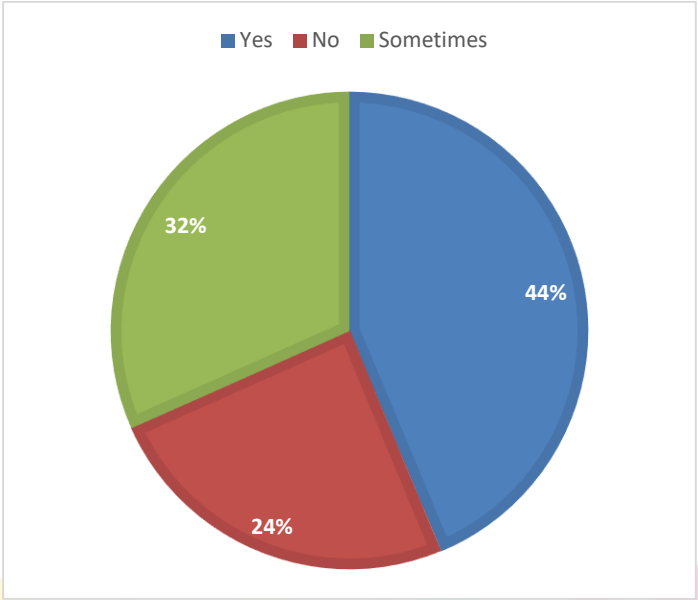

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