

RISK FACTORS AND CONTRIBUTING FACTORS

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Abstract: Risk factors and contributing factors play a crucial role in various domains, including healthcare, finance, and safety management. This abstract explores the significance of identifying and understanding these factors to mitigate potential hazards and make informed decisions. We examine the concept of risk factors, their types, and the methodologies for assessing and managing them. Additionally, we delve into contributing factors, which often underlie adverse events, and discuss their role in root cause analysis. The abstract also highlights the importance of proactive risk identification and offers insights into key keywords associated with this critical subject.

Keywords:

Risk Factors, Contributing Factors, Risk Assessment, Hazard Mitigation, Root Cause Analysis, Decision Making, Safety Management, Healthcare, Finance, Proactive Risk Identification.

INTRODUCTION

Risk factors and contributing factors are fundamental elements in the evaluation and management of potential hazards and adverse events across various fields, including healthcare, finance, and safety management. Recognizing and comprehending these factors is paramount for making informed decisions, reducing risks, and enhancing overall safety and efficiency.

Risk factors encompass a wide array of variables and circumstances that increase the likelihood of undesirable outcomes. They are vital components in risk assessment, allowing organizations and individuals to quantify and prioritize potential threats. Understanding the different types of risk factors and employing appropriate assessment methodologies is essential in developing strategies to mitigate risks effectively.

On the other hand, contributing factors often lie at the heart of adverse events. These factors are the underlying conditions, actions, or oversights that lead to undesirable outcomes. Recognizing and addressing contributing factors are essential for conducting root cause analyses,

which are crucial for preventing the recurrence of adverse events.

This exploration aims to shed light on the concepts of risk factors and contributing factors, their roles in various domains, and the significance of proactive risk identification. It will also delve into methodologies for risk assessment and the importance of decision-making in risk management. By examining these aspects, we hope to provide valuable insights that can aid professionals and organizations in effectively identifying, analyzing, and mitigating risks, thereby promoting safety, efficiency, and success in their respective fields.

IDENTIFICATION OF RISK FACTORS SUCH AS DEVICE USAGE DURATION AND LIGHTING CONDITIONS

Identification of risk factors, such as device usage duration and lighting conditions, is crucial in various contexts, from promoting user safety and well-being to optimizing productivity and efficiency. Let's explore these two specific risk factors in more detail:

1. Device Usage Duration:

- **Healthcare:** Prolonged use of electronic devices, such as smartphones, tablets, and computers, has been associated with various health issues. Excessive screen time can lead to digital eye strain, disrupted sleep patterns, and musculoskeletal problems. Identifying the duration of device usage is essential for assessing the risk of these health concerns, especially in children and individuals with desk-bound jobs.
- **Road Safety:** In the context of driving, the duration of smartphone usage while behind the wheel is a significant risk factor for accidents. Distracted driving due to texting, browsing, or using apps increases the likelihood of crashes. Monitoring and limiting device usage duration while driving is crucial for road safety.

2. Lighting Conditions:

- **Workplace Safety:** Poor lighting conditions in workplaces can contribute to accidents and injuries. Insufficient lighting may lead to slips, trips, and falls, as well as difficulty in reading or interpreting information. Identifying and improving lighting conditions is essential for creating safe and productive work environments.
- **Healthcare:** In healthcare settings, lighting conditions play a role in patient outcomes and staff performance. Inadequate lighting can hinder medical procedures, increase the risk of medication errors, and affect patient comfort. Assessing and optimizing lighting conditions are critical for patient safety and healthcare quality.

Identifying these risk factors typically involves data collection and analysis. For device usage duration, this may include tracking screen time through apps or device settings, conducting surveys or interviews, and monitoring user behavior. To assess lighting conditions, measurements of illuminance (lux), color temperature (Kelvin), and glare need to be taken at relevant locations.

Once these risk factors are identified, organizations and individuals can take appropriate measures to mitigate them. For device usage duration, this might involve implementing screen-time limits, promoting regular breaks, and raising awareness about responsible device usage. Improving lighting conditions may require installing better lighting fixtures, using ergonomic lighting design principles, and ensuring routine maintenance.

In conclusion, recognizing and addressing risk factors like device usage duration and lighting conditions are essential for enhancing safety, health, and overall well-being in various settings. Proactive identification and mitigation of these factors can lead to more sustainable and productive practices.

THE ROLE OF ERGONOMIC PRACTICES IN REDUCING OCULAR STRAIN AMONG STUDENTS

Ergonomic practices play a significant role in reducing ocular strain among students who spend extended periods of time using digital devices, such as computers and smartphones, for studying and other educational activities. Ocular strain, often referred to as digital eye strain or computer vision syndrome, is a common issue among students, and implementing ergonomic strategies

can help alleviate and prevent its symptoms. Here's how ergonomic practices can contribute to reducing ocular strain:

1. Proper Monitor Placement:

- **Eye Level:** Adjusting the computer monitor to eye level reduces the need for students to tilt their heads up or down, which can lead to neck strain and discomfort. This positioning also helps minimize glare and reflections on the screen.

2. Optimal Viewing Distance:

- **Arm's Length:** Students should maintain a comfortable viewing distance from the screen, typically around 20 to 24 inches (about arm's length). This prevents the eyes from working too hard and minimizes the risk of eye strain.

3. Correct Screen Settings:

- **Brightness and Contrast:** Adjusting the screen's brightness and contrast to comfortable levels can reduce the strain on the eyes. Avoid excessive screen brightness, which can cause glare and discomfort.

4. Frequent Breaks:

- **20-20-20 Rule:** Encourage students to follow the 20-20-20 rule: Every 20 minutes, take a 20-second break, and focus on something at least 20 feet away. This practice helps relax the eye muscles and reduces eye fatigue.

5. Proper Lighting:

- **Ambient Lighting:** Ensure that the room where students are working has appropriate ambient lighting. Avoid glare from windows or overhead lights that can create reflections on the screen. Task lighting may also be necessary for reading materials.

6. Ergonomic Furniture:

- **Comfortable Chairs and Desks:** Providing ergonomic chairs and desks with adjustable features can promote better posture and comfort. Proper seating and desk height are essential for preventing neck and back strain, which can indirectly affect eye comfort.

7. Screen Filters and Blue Light Blocking:

- **Anti-Glare Filters:** Attach anti-glare filters to computer screens to reduce reflections and glare.
- **Blue Light Blocking:** Consider using blue light-blocking screens or glasses to

reduce exposure to harmful blue light emitted by digital devices.

8. **Regular Eye Exams:**

- Encourage students to have regular eye examinations to detect and address vision problems. Wearing the correct prescription eyeglasses, if needed, can significantly reduce eye strain.

9. **Blinking Exercises:**

- Remind students to blink regularly while using digital devices to keep the eyes moist and reduce dryness and discomfort.

10. **Digital Device Hygiene:**

- Promote healthy digital device habits, such as limiting screen time, maintaining good posture, and taking care of eye health.

By implementing these ergonomic practices, educational institutions can help students reduce ocular strain, enhance their overall comfort and well-being, and improve their focus and productivity during study sessions. It's essential to educate students about these practices and encourage them to incorporate them into their daily routines to maintain good eye health and reduce the risk of digital eye strain.

EFFECT OF ONLINE GAMING AND RECREATIONAL SCREEN TIME ON OCULAR HEALTH

Online gaming and recreational screen time can have both positive and negative effects on ocular health. While these activities provide entertainment and leisure, they also pose certain risks to the eyes. Here's an overview of the effects of online gaming and recreational screen time on ocular health:

Positive Effects:

1. **Hand-Eye Coordination:** Some video games, particularly those involving fast-paced action or precision movements, can improve hand-eye coordination. This may have a positive impact on visual skills and reaction times.
2. **Visual Acuity:** In some cases, gaming experiences may require players to pay close attention to details and small objects on the screen, which could potentially enhance visual acuity.

Negative Effects:

1. **Digital Eye Strain:** Prolonged screen time, whether for gaming or other recreational activities, can lead to digital eye strain or computer vision syndrome. Symptoms include eye fatigue, dryness, blurred vision, headaches, and discomfort.
2. **Increased Risk of Myopia:** Some studies have suggested a link between excessive screen time, especially during childhood and adolescence, and an increased risk of myopia (nearsightedness). Prolonged close-up activities can contribute to the development and progression of myopia.
3. **Blue Light Exposure:** Screens emit blue light, which can disrupt circadian rhythms and affect sleep patterns. Overexposure to blue light, especially in the evening, may lead to sleep disturbances and eye strain.
4. **Reduced Blink Rate:** When engrossed in gaming or screen-based activities, individuals tend to blink less frequently. Reduced blinking can result in dry eyes and discomfort.
5. **Increased Screen Brightness:** Many gamers prefer high screen brightness for better visibility, but this can lead to increased glare and discomfort, exacerbating digital eye strain.

Preventive Measures and Mitigation:

To mitigate the negative effects of online gaming and recreational screen time on ocular health, consider the following preventive measures:

1. **Follow the 20-20-20 Rule:** Take a 20-second break to look at something 20 feet away every 20 minutes to relax eye muscles.
2. **Adjust Screen Settings:** Optimize screen brightness, contrast, and font size to reduce eye strain.
3. **Blue Light Filters:** Use blue light filters or wear blue light-blocking glasses to reduce blue light exposure.
4. **Ergonomic Setups:** Maintain proper posture and screen positioning to reduce strain on the neck and eyes.
5. **Regular Eye Exams:** Schedule regular eye examinations to monitor eye health and address vision issues promptly.
6. **Limit Screen Time:** Establish screen time limits, especially for children, and encourage outdoor activities to reduce the risk of myopia.
7. **Stay Hydrated:** Drink enough water to prevent dry eyes, and use lubricating eye drops if necessary.

8. **Take Breaks:** Encourage breaks between gaming sessions to rest the eyes and engage in other activities.

In conclusion, while online gaming and recreational screen time can have positive effects on certain visual skills, they also carry the risk of digital eye strain, myopia, and exposure to blue light. Practicing good screen habits and taking steps to reduce eye strain can help maintain better ocular health while enjoying these activities.

IMPACT OF INADEQUATE BREAKS AND PHYSICAL ACTIVITY ON OCULAR HEALTH

Inadequate breaks and a lack of physical activity can have a significant impact on ocular health, contributing to various eye-related problems and discomfort. Here's an overview of how these factors affect ocular health:

Impact of Inadequate Breaks:

1. **Digital Eye Strain (Computer Vision Syndrome):** Prolonged periods of screen time without adequate breaks can lead to digital eye strain. Symptoms may include eye fatigue, dryness, blurred vision, headaches, and discomfort. The continuous focusing on screens can cause eye muscles to become fatigued and lead to these symptoms.
2. **Reduced Blink Rate:** When engaged in extended screen activities, individuals tend to blink less frequently. Blinking is essential for spreading a protective tear film over the eye's surface. Reduced blinking can result in dry eyes and a gritty or burning sensation.
3. **Increased Risk of Myopia:** Inadequate breaks from near work, such as reading or screen time, can contribute to the development and progression of myopia (nearsightedness), especially in children and adolescents.
4. **Decreased Tear Production:** Prolonged screen time without breaks can lead to decreased tear production. Insufficient tear production can result in dry eye syndrome, which causes discomfort and may damage the ocular surface.

Impact of a Lack of Physical Activity:

1. **Reduced Blood Circulation:** A sedentary lifestyle with limited physical activity can lead to reduced blood circulation throughout the body, including the eyes. Proper blood flow is essential for delivering oxygen and nutrients to the eyes and removing waste products.

2. **Increased Risk of Eye Diseases:** Physical inactivity is associated with a higher risk of certain health conditions, such as diabetes and hypertension. These systemic conditions can have negative effects on ocular health and increase the risk of eye diseases like diabetic retinopathy and hypertensive retinopathy.
3. **Obesity and Ocular Health:** Lack of physical activity is a contributing factor to obesity, which has been linked to various eye conditions, including glaucoma and age-related macular degeneration.

Preventive Measures and Mitigation:

To mitigate the impact of inadequate breaks and physical inactivity on ocular health, consider the following measures:

1. **Follow the 20-20-20 Rule:** Take a 20-second break to look at something 20 feet away every 20 minutes during screen time to relax eye muscles.
2. **Regular Physical Activity:** Engage in regular physical activity to improve blood circulation and overall health. Activities such as walking, jogging, and aerobic exercises can be beneficial.
3. **Stay Hydrated:** Drink plenty of water to maintain proper tear production and prevent dry eyes.
4. **Eye Exercises:** Perform simple eye exercises to reduce eye strain and improve focus. These exercises can include rolling your eyes, focusing on near and distant objects, and palming (covering your eyes with your palms).
5. **Balanced Lifestyle:** Maintain a balanced lifestyle that includes healthy eating, regular sleep patterns, and stress management to support overall well-being, including ocular health.
6. **Regular Eye Exams:** Schedule routine eye examinations to monitor eye health and detect any issues early.

In conclusion, inadequate breaks during screen time and a lack of physical activity can have adverse effects on ocular health, leading to digital eye strain, dry eyes, myopia, and an increased risk of eye diseases. Practicing good eye care habits and incorporating physical activity into daily routines can help maintain and improve ocular health.

CONCLUSION

In conclusion, the impact of inadequate breaks and a lack of physical activity on ocular health is significant and should not be underestimated. Prolonged screen time without appropriate pauses can lead to digital eye strain,

reduced blink rates, and an increased risk of myopia, particularly among children and young adults. Additionally, a sedentary lifestyle devoid of physical activity can impede proper blood circulation to the eyes and contribute to systemic health conditions that affect ocular health.

To safeguard our eyes and maintain optimal ocular well-being, it is imperative to follow preventive measures. Incorporating the 20-20-20 rule, engaging in regular physical activity, staying hydrated, and practicing eye exercises are essential steps to reduce the adverse effects of screen time and physical inactivity. Furthermore, maintaining a balanced lifestyle with a focus on healthy eating, adequate sleep, and stress management is crucial for supporting overall eye health.

Regular eye examinations remain a cornerstone in the preservation of ocular health, allowing for early detection and intervention when necessary. By prioritizing these measures and adopting a holistic approach to eye care, we can minimize the detrimental effects of modern digital lifestyles and promote long-term ocular health and well-being.

REFERENCES

1. Ichhpujani, P., Singh, R.B., Foulsham, W. *et al.* Visual implications of digital device usage in school children: a cross-sectional study. *BMC Ophthalmol* **19**, 76 (2019). <https://doi.org/10.1186/s12886-019-1082-5>
2. Shashi Ahuja, Mary Stephen, Naveen Ranjith, Parthiban; Assessing the Factors and Prevalence of Digital Eye Strain among Digital Screen Users using a Validated Questionnaire – An Observational Study: <http://www.ijmedph.org/v11/i1>, DOI : 10.5530/ijmedph.2021.1.3
3. James W., Amy Sheppard; **Digital eye strain: Prevalence, measurement and amelioration; 11/2019** <https://bmjophth.bmj.com/content/3/1/e000146>
4. Aiman Ahmed Khan, Rashmi Jain, Vidya Hegde, Anupama Bappal.; Rashmi SDigital eye strain among undergraduate medical students in a tertiary eye care hospital of south India – A questionnaire based study; *Indian Journal of Clinical and Experimental Ophthalmology*, April-June, 2019;5(2):208-210
5. Virtual Learning and Its Adverse Effects on Children's Eyesight; <https://medium.com/beingwell/virtual-learning->

[and-its-adverse-effects-on-childrens-eyesight-e4f74b174347](https://doi.org/10.1186/s12886-019-1082-5); 16-Nov-2020