

How to Cite:

Anand, N., Sharma, J., Sharma, Y., Yadav, M., Arora, S., & Kumari, M. (2022). Prevalence of neck pain in health care professionals: A literature review. *International Journal of Health Sciences*, 6(S1), 3843–3854. <https://doi.org/10.53730/ijhs.v6nS1.5757>

Prevalence of neck pain in health care professionals: A literature review

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Abstract--Introduction: Musculoskeletal Disorders (MSDs) refers to complications related to bone, muscle, tendon, and nerve. According to WHO MSDs refers to complication related to bone, muscle, tendon, cartilage, and the nerve gets affected. Healthcare professionals are more prone to have MSDs. This study is done to find the neck pain, ergonomic, and MSDs in healthcare professionals. Methodology: An online search was done on the basics of neck pain, musculoskeletal disorder, and ergonomic factors. Articles included in this study belonged to health care professionals only. Result: This study reported that dentists, nurses, physiotherapy, surgeon, was at the highest risk of having neck ergonomic complaints. The factors that was responsible for having awkward movement, non-ergonomic environment, repeated body stress, patient handling. Conclusion: Healthcare workers are exposed to have MSDs. WRMSDs silently develop, due to ergonomic, physical, psychosocial factors. Physiotherapists, nurses, dentists, surgeons were affected by MSDs. Positioning, change in work style, decrease work pressure, educating ergonomics and intermittent exercise, stretching, stabilizing, ergonomic principal, knowledge improvement, awareness, training, modified work environment, postural training, regular exercise, alter

work tools, change in work technique and change in unhealthy habit are some evident to prevent from health hazards..

Keywords---musculoskeletal pain, neck pain, ergonomic, healthcare professionals, physiotherapist, nurses, doctors, health care workers.

Introduction

Musculoskeletal Disorders (MSDs) refers to complications related to bone, muscle, tendon, and nerve. According to WHO MSDs refers to complication related to bone, muscle, tendon, cartilage, the nerve gets affected. (1) Millions of people are affected by this around the world. MSDs most commonly affect healthcare professional's physician, physiotherapist, nurses, surgeon, specialist, operative room staff. 59 million healthcare professionals go through daily health hazards. Medical, dental, nurses are prone to ergonomic hazards. (2) MSD results in pain and functional impairment. 91% physiotherapist suffers MSD in which 48% neck pain. (3) Neck pain experienced by every individual in their lifetime. Most familiar injuries in the workplace occur due to MSD. The problem increases slowly and gradually and can exist for many years. (4) Neck joint combines with vertebra to form neck joint that allows movement of the head the cervical spine has its major function which allows movement in the neck.

Ergonomic is the technique of an individual to perform work in the workplace. the advantage of ergonomics to enhance productivity, well-being, and smoothness in work and improve economic status. (4) Ergonomic principal and workouts decrease the possibility of disorders. (6) To abstain this in personal too professional life ergonomic principle must apply in daily life. Due to the negligent or unknowing ergonomic principal neck had become house of pain. In working hours professionals go through many uneasy positions that have a direct impact on the neck. Applying ergonomic leads to many benefits such as increasing work productivity, decreasing stress on joints, decrease muscle tension. MSD is most common all over the world.

Neck pain is experienced by 67% of people in their lives. According to findings 7 million people annually experience it and among them, health care staff is higher than others. (6) Ergonomic science is responsible to improve task productivity, accuracy, decrease tension, stress, and torture that body goes through. Ergonomic influence healthy lifestyle and Working style. Healthcare nurses are a most demanding profession that suffers risk in their duties. 40-90% of nurses in the world are susceptible to MSD (.4) Obstetrics and Gynaecology health profession are affected due to their responsibility includes surgery, caring, and handling patient which involves body strength and repetitive movement on joint. Repeatedly, slowly and unwillingly they go through poor ergonomics environment. (7) Surgeon experience work-related injuries include cervical stenosis, lumbar disc herniation, carpal tunnel syndrome, numbness which limits their performance and concentration. (8) Dentistry is a demanding profession that requires stable posture and concentration throughout the session, unknowingly ignorance of ergonomic lead to injury and progress to disability. Repetitive

forward flexion of neck and posture habit of neck cause cervical instability, tension neck syndrome.

Methodology

Review of literature were included research articles published since 2008 to 2021. Key words were health care professionals, neck ergonomic, MSDs, surgeon, pathologist, physiotherapist. Articles included were from search engine like Google scholar, Pub med, research gate, Medline, Springer; science direct. Indian as well as other country articles were selected.

Inclusion criteria: - health care professionals were included in this study

Exclusion criteria: - study done on other profession except healthcare were not included.

Review

ROHAIL AMIR BABAR (2020) Work-Related Neck Pain Among The Dentists Working In Islamabad & Rawalpindi; A Cross-Sectional Survey. This cross-sectional survey was done among 385 dentists followed by a general dentist, orthodontists, Maxillofacial surgeons, Prosthodontics (192,78,31,29 respectively). Neck Disability Index (NDI) was used to identify the severity of neck pain result as 44% showed mild and 33% showed moderate disability. Poor posture, prolonged standing, repetitive movement, neck flexion for long period were trigger points for neck pain. Neck pain is the most common MSDs seen in dentists in which 91% of young dentists were prone to have mild symptoms. Awareness, good habits, and stretching can prevent future disability. (1)

Almas Hamid et al (2018) "Ergonomics Hazards and Musculoskeletal Disorders Among Workers of Health Care Facilities" This survey was done to find out healthcare hazards among 200 personnel in Pakistan. They mentioned 56% neck pain declared following muscle sprains (76.5%), body posture issues (56.0%), excessive stretching of muscles (67.5%), and bending/ twisting at work (55.5%). physical (65%) hazards were most common among health care professionals. These associated symptoms were caused due to awkward posture, long sitting, prolonged standing heavy weight lifting, repeated movement, bending, stress. They recommended improving work quality can prevent future health issues. (2)

Emel Tasvuran Horata et al (2017) " Evaluation of low back and neck pain and disability of interns at physiotherapy and rehabilitation department of "Afyon Kocatepe University" in this study prevalence of neck pain is evaluated o prevent future disability among intern physiotherapist. 87 members were participated in the study.21.8% of participants show a recent complaint of pain and 16% show a disability of the neck. Heavy weight lifting, repetitive movement, proving hydrotherapy to the patient, electrotherapy, virtual reality therapy makes them prone to have MSDs. This study found that neck pain and low back pain have a high rate of prevalence of MSDs. Awareness, work environment, ergonomic, and taking a break can prevent further health problems. (3)

Afshar Mohammad et al (2019) "Relationship between knowledge of ergonomic and workplace condition with musculoskeletal disorders among nurses" this descriptive and analytical study is done by over 260 nurses in Iran. Their duties involve caring, lifting, shifting, twisting, long-standing, and repetitive awkward movements. The self-made questionnaire, (NMQ) was used to collect data to find an ergonomic condition in the working environment. 77% of participants complained MSDs with a lack of knowledge about the ergonomic principle. 62 % were suffering from neck pain disorders. this study reported that lack of knowledge has directly linked with workplace ergonomic problems and suggested that training, use of appropriate equipment, learning work techniques play a role to prevent injuries. (4) Mohammad Khandan et al(2016)'High Ergonomic Risk of Computer Work Postures Among Iranian Hospital Staff: Evidence From a Cross-Sectional Study' In this study survey were done in two hospitals; among nurses, administrative department and secretary of wards .150 Sample of the population were studied using a Nordic musculoskeletal questionnaire(NMQ), Nobel ergonomic postural assessment method(NERPA), Rapid office strain assessment (ROSA). 94 % had complained of work-related musculoskeletal pain, were as neck pain was most frequently reported is 74%. The highest frequency of unsuitable ergonomic posture was the reason for musculoskeletal disorders. Early intervention and follow-up ergonomic principal found to improve performance and future complications. (5)

Zainab Bazwand et al (2020) "Ergonomic and at work exercises based educational program among nurses working in Hospital: a protocol design regarding neck disorder prevention" This semi-experimental study was done on 100 nurses of Iran to find the prevalence of MSDs among them. 67% of people experience neck pain which is found as the most common MSDs. Lack of knowledge, awareness, education, and work environment is the primary cause of work-related musculoskeletal disorders. This study suggested that ergonomic training, exercise, creating awareness, educational programs help to reduce health issues and improve quality of life. (6)

Jingjing Wang et al (2017) "Work-Related Musculoskeletal Disorders and Risk Factors among Chinese Medical Staff of Obstetrics and Gynaecology" This study is done on obstetrics and gynaecology in China, to find out the prevalence of MSDs. To find the severity self-made questionnaire were distributed. 1017 subjects were taken and 928 were responded to questionnaires. The study found 85.5% were at high prevalence whereas 60.3% were affected with a neck. Unfriendly work environment, psychological factor, antagonistic posture, stress, ergonomic factor, workload, shrugging posture, income were risk factors to develop WRMSDs. Improvement in the work environment, follow a healthy lifestyle and posture correction recommend to prevent future injuries. (7)

Chee-Chee H. Stucky(2018)" Surgeon symptoms, strain, and selections: Systematic review and meta-analysis of surgical ergonomics" this systematic review study is done on surgeons to assess the symptom due to ergonomic .5152 surgeon were selected to study in which 48% experienced neck pain including symptoms like fatigue, numbness, and stiffness(71%,37%and 45% respectively).this symptoms occur due repetitive tasks or pressure on joints, etc. surgeons who were doing open surgery and minimal invasive surgery(MIS) were

compared. This comparison showed that surgeon who was performing MIS were more likely to have MSDs (83% versus 37%) neck pain is higher in frequency seen among MIS. 59% to 99% were unaware of ergonomic principals. This study recommended for future ergonomic training at the institute, creating awareness will improve performance and promote a healthy life. (8)

Sidra Sarwar et al (2020)" Frequency of Neck and Upper Extremity Musculoskeletal Disorders in Dentists" this cross-sectional study was conducted among 162 dentists in which 71% were suffered from musculoskeletal pain .25% were affected with neck pain. Awkward, static, repeated posture, and poor working style maintained for a longer period were the reason for the prevalence of MSDs. Pain and weakness were the common symptoms found which are 45.7% and 20.4% respectively. This study recommended that awareness, good working technique, and workplace ergonomic should be taken into account for improvement. (9)

Naveen Ganer et al (2016)" Work-Related Musculoskeletal Disorders among Healthcare Professional and their Preventive Measure: A Report" According to this study MSDs is partially working related pain which highly effective health care professionals such as doctors of different departments. Physical baring, awkward movement, uncomfortable posture, repetitive movement, lifting, shifting, and many more reasons are found as prevalent for MSDs. Higher the patient exposure equivalent to higher the risk such as Nurses (41.70%) , physiotherapists (35%) and dentists (22.6%) followed by physician (13.3%), surgeon & orthopaedist (each 12.8%), gynaecologists (11.7%), physiotherapist (7.4%), otolaryngologist and paediatrician (each 6.4%), anaesthetist (5.9%), dermatologists (4.8%), psychiatrist and radiologist (each 4.3%), cardiologist and ophthalmologist (each 3.7%), and oncologist (2.7%) . They reported that (61%) of physical therapists, 6.6% dental surgeons, 80% sonographers, 77% physicians that participate in endoscopic surgeries daily, 43.7% otolaryngology experienced MSDs. Study shows that neck (20.21%), knees (14.36%) and lower back (25%) were a most affecting anatomical area in work-related MSDs in a different specialization. Yoga, exercise, good posture ergonomic intervention can prevent future risks. (10)

Tânia Ribeiro et al(2016)" Work-related musculoskeletal disorders in primary health care nurses". This cross-sectional study was done to evaluate WSDs symptoms in primary health care nurses .409 nurses were studied in which 89% were reported at high risk in the last 12 month. 50.1% reported cervical region affected .51.4% were restricted to work due to severity of pain in last 12 month. Their duties involve administrative care, home care, computerized work, and wound care that make them prone to MSDs. They recommended developing occupational prevention, control program, organization, and technical measures. (11)

Nurul Ikhmar Ibrahim (2012) "Prevalence of musculoskeletal disorders among staffs in specialized healthcare center". This study was done to find the prevalence rate among working staff oh healthcare professionals. 68 staff were selected for this study of Cardiovascular Lab (CVL), Nuclear Radiology, and General Radiography. They proposed that these departments acquire MSDs due to their working style. They mention that the Nuclear Radiology department

(77.2%), CVL department (72.2%), and General Radiography department (50%) had prevalence in last 12 months followed by 47.2%, 36.4 and 20% respectively in last 7 days. CVL department witnessed most reported complaints were neck pain which is 94.4%. Overall, they reported 84% were prevalent to neck pain in which most of them were male. (12)

Ramin Mehedad et al (2012) study was done to find out the prevalence rate of MSDs in physicians. The self-made questionnaire was distributed to 405 physicians. they mention that 41.7% announce symptoms of MSDs. 9.8 complains about neck pain in the last 12 months. Neck pain is associated with working styles like forwarding bending, long sitting, neck flexion, exposure to ergonomic hazards, and posture adoption over a longer period. they concluded that general physician is less prevalent than other health care departments. (13)

Parul Raj Agrawal et al (2014) "Work-related musculoskeletal disorders among medical laboratory professionals: a narrative review" This study is to find the prevalence of MSDs among lab technicians. 40-60% were at risk of MSDs in which neck is at highest, reported 18-78%. (14)

I.D. Anyfantis et al (2017) "Musculoskeletal Disorders Among Greek Physiotherapists: Traditional and Emerging Risk Factors " This survey was done to find the prevalence of MSDs among physical therapists. 252 subjects were taken for study. 89% were experiencing work-related MSDs. 9% complaint about neck pain. Musculoskeletal injuries were caused due to working style, over movement, uncomfortable positions. Awareness sessions and changes in work patterns were taken as prevention. (15)

Babatunde OA Adegoke (2008) "Work-related musculoskeletal disorders among Nigerian Physiotherapists" this cross-sectional study was done among physiotherapists in Nigeria to find the rate of prevalence of musculoskeletal disorders. 126 participants were studied and in which 91.3 % were reported to prevalence for MSDs in 12 months. They noted that work within 5 years of graduation was at high prevalence to MSDs which is 61.7% aged younger than 30 yr. 34.1% had complaints of neck pain. Factor that are responsible for most WMSDs are treating a large number of patients per day. 62.6% alter their treatment because of WMSDs. 64.3% adapted coping techniques to prevent WMSDs. (16)

Elnaz Asghari et al (2019) "Musculoskeletal pain in operating room nurses: Associations with quality of work-life, working posture, socio-demographic and job characteristics". This cross-sectional study was done to find the prevalence among nurses working in the operating room of Iran. 144 nurses were selected to study .92.5% had mentioned musculoskeletal pain whereas 44.9% had complained about neck pain. Wrong working techniques, work shift, working pressure, training, working posture had the region of contribution in musculoskeletal pain (17)

Nahid Rahmani et al (2013) " Work-related neck pain in Iranian dentists: An epidemiological study" This cross-sectional study was done among 300 dentists of Iran. 34.7% of nurses were prone to have lifetime neck pain following 19.3% at

present. Non-comfortable position, repeatetative movement, workload, awkward posture, static position for a long period, lifetime practice was some characteristics factor of having MSDs. They reported dentists were at a higher prevalence of MSDs among healthcare professions. (18)

Arsalan Humayun (2021) "Physical & Postural Determinants of Musculoskeletal Disorders among Dental Healthcare Professionals" This cross-sectional study was done among 132 dentists of hydrabad.87% of participants had compliant of suffering musculoskeletal pain in which 65.8%had neck pain. skills, socio-demographic data, awkward working posture, work pressure are considered as factors that cause MSDs. (19)

Junaid Amin (2019) "Ergonomics, Exercises and Education to Prevent Neck and Back Pain among Dentists" This study revealed that ergonomic, exercise, education, training, awareness had a great role to prevent neck pain among dentists. They suggested finding environmental, physical, psychosocial factors that lead to musculoskeletal pain in further studies. (20)

Akshay Bansode (2016) "Effectiveness of Isometric Neck Exercises, Stretching and Ergonomics Over Ergonomic Alone for Neck Pain in Physiotherapists". This experimental study was done among thirty physiotherapists to find the effect of exercise, ergonomics, and stretching among them. They were divided among groups in which one was provided with ergonomic, stretching, and exercise, and the second were followed with only ergonomic for 4 weeks. They found that 60% had work-related musculoskeletal pain in which 20% had neck pain reported as most common among physiotherapists. 1 group had better results in response to pain to ergonomic principles, isometric exercise, stretching as compared to those who had treated with only ergonomic intervention. work environment, poor posture, repetitive movement, static posture acquired for a long period, heavy patient handling during duty, lack of regular exercise are considered as risk factors of MSDs. This study suggested that education and proper training for physiotherapists had a great effect to improve lifestyle. This study concluded that stabilization, strengthening exercise had a great effect on pain management. (21)

Farhaduzzaman S.M. (2018) "Prevalence of musculoskeletal disorders among selective hospital employees in Bangladesh" This study was done among 645 healthcare workers in Bangladesh which include doctors, dental, administration, nursing, physiotherapy, laboratory, radiology, and housekeeping. They found that the prevalence of neck pain was 285 in the last 12 months. They categorize according to the department in which nurses were found to be most prevalent and least were dentists. Whereas in last 12-month dentists were found to be most prevalent which is 100% in both male and female whereas physiotherapist was least prevalent which is 22% in both male and female respectively, on another side in 1-week prevalence dentists were found most prevalent .75% physician reported neck pain,32% in nurses. according to the body, the part neck was reported as 100% in the dental department. They reported twisting, crawling, stair up-down, bending, or over workload were characterized as risk factors producing WMSDs.work environment alteration, tools, work hour modification, work style changes can prevent from MSDs. (22)

MARYAM RABIEI (2011) "Musculoskeletal Disorders in Dentists" this cross-sectional study was done on 92 dentists of Iraq. They mention some facts that dentists were exposed to occupational and economic hazards which makes them prone to have musculoskeletal disorders. Their investigation proposed data as 73% had musculoskeletal and 26% had no complaints. According to several sites, 19.6% had pain in one site and 59.4% had more suffered pain more than one site. They present the neck as most as the most painful site in this study and the back as the second most prevalent site. RULA, VAS, NMQ, and questionnaires were used to study this. Awkward posture, unhealthy habit, last of ergonomic types of equipment were evident as the cause of musculoskeletal pain among them. This study suggested that adopting good habits, acquiring more knowledge, using ergonomic equipment, daily exercise, stretching play a big role in preventing disorders and play a healthy career. (23)

Discussion

ROHAIL AMIR BABAR et al in this study young dentists or final year dentists were found neck pain syndrome most commonly. This study was done in Islamabad and Rawalpindi. 91.1% of the participants were young and found as a limitation and less assemble at this age. They found most of the participants took a break when they need. 62.6% of professionals were found the habit of doing their work in a sitting position while 37.4% adapted to work in a standing position. Arsalan Humayun et al reported 87% reported MSDs which is the most common among them .young dentists reported more MSD as compare to experienced practitioners. awkward posture was reported at the highest risk of having MSDs. Sidra Sarwar et al reported 71% of dentists were prevalent to have WRMSDs in which 25.9% suffer neck pain most of the dentists have to maintain the inadequate posture for a long time cause musculoskeletal pain. MARYAM RABIEI et al 73% of dentists complain MSDs along with 43% with neck pain, RULA assessment was done. Upper extremity was found most affected.

Akshay Bansode et al, reported that neck pain treated among physiotherapists by applying ergonomic, stretching, and isometric exercise is more beneficial than only treated with ergonomic principles. Emel Tasvuran Horata et al Younger therapists experienced a higher prevalence of MSDs .21.8% of participants experience neck pain which is the second common WMSDs. Altering work environment, acquiring good posture during work can prevent health issues. applying ergonomic principal can prevent from pain. I.D. Anyfantis et al explained that physiotherapists suffer MSDs due to their work demand. Neck pain caused due to vertebra suffer stress or overuse.

Parul Raj Agrawal et al et al mention lab technician were more prevalent to have neck pain. their task includes more use of neck as well as back muscle. Inadequate posture, work hours considered as the cause of MSD.

Mohammad Khandan reported neck pain in 70% of participants working at computers in the healthcare sector. non-ergonomic posture and lack of training as the risk of having MSDs. Junaid Amin et al proposed that exercise, education, ergonomic, knowledge, awareness has a great impact to prevent neck pain. JingJing wang et al reported 85.5% gynaecologist and obstetrics reported

prevalence of WMSDs, neck is mostly affected in them. Personal and ergonomic factors were reported as risk. alteration of the work environment is beneficial in decreasing of MSDs.

Afshar Mohammad proposed a lack of knowledge of ergonomic principles and MSDs among nurses. The ergonomic environment was not good. 62.7% reported neck pain which is most common in nurses. Using ergonomic tools and equipment and training can prevent from WMSDs. (Elsa and) mention 92.5% have a prevalence to have MSDs due to work stress, work hours, physical activity, psychosocial, quality of life is a risk factor of having WRMSDs. At least one region of the body is affected in which the neck is superiorly affected. operating room nurses are at higher risk but lesser than gynaecology nurses due to their higher physical demand .alter work environment, training, physical and mental stability, education need to be done for better work results. Tânia Ribeiro et al mention 89% had a prevalence of having WRMSDs. Nurses have to perform different types of tasks from administrative to patient handling often challenging for body postures. there is a need to be proper training and knowledge help to minimize WRMSDs. Nurul Ikhmar Ibrahim et al reported neck pain was commonly seen among healthcare personnel, especially among nurses. dynamic work characteristics make health care workers suffer from MSDs at the different parts of the body. their work required static inadequate posture, partial handling of the patient, shifting of the heavy patient from one place to another, mobilizing, prolonged posture position, and microtrauma at work stations. MSDs also cause due to some psychosocial issue, mental stress, job satisfaction, etc. physical demand is higher in healthcare professionals which effect female works more as compare to male. Zainab Bazwand et al et al reported that ergonomic, exercise at work, awareness improve knowledge of nurses and will be beneficial in the prevention of neck pain among nurses working at hospitals.

Nahid Rahmani et al found a 34.7% lifetime prevalence to have neck pain. Years of practice, health issues, physical load, less satisfaction of job were some reasons to have MSDs. Having assistance at a job, job satisfaction, good health condition, work strategies can prevent from WRMSDs whereas Naveen Ganer et al reported healthcare professionals who work in contact with patients are more chances to have WRMSDs and prone to get affected by MSDs. Almas Hamid et al reported 80% of healthcare workers to suffer MSDs all around the world. 76.5% faced ergonomic hazards. Work place injuries are common among nurses and semi-skilled personnel. Nature of work, work environment, work hours a day are responsible for health issues. psychosocial hazards, biological hazards, physical hazards, psychosocial hazards, occupational hazards are characteristics of having WRMSDs.

Chee-Chee H. Stucky mention surgeon suffers MSDs who perform minimally invasive surgery had a history of neck pain. ignoring economic, overstressed posture, static position for a long time at the workplace and chronic habit, lack of awareness cause of WRMSDs. Robotic approach, ergonomic education. 59% to 99% were unaware of ergonomic principles.

Ramin Mehedad et al reported 10-20% of physicians were prevalent to MSDs. Different work patterns make them less vulnerable than other healthcare professionals. 9.8% reported neck pain. Risk factor includes stressed posture exposure, years of work, ergonomic factor.

Limitations

Ergonomic machines as well as tools were not invented
Temporary management were found instead of permanent relief

Conclusion

This study was done to find the prevalence rate among health care professionals. Many of the healthcare workers affected by MSDs and most of the nurses, physiotherapist, and surgeon. Healthcare workers are exposed to have MSDs. WRMSDs silently develop, due to ergonomic, physical, psychosocial factors. Physiotherapists and physiotherapy inter more likely to have MSDs because of their job requirements such as handling, lifting heavy patients, and many repetitive tasks the highest number of physiotherapists are exposed to WRMSDs reported in Nigeria.

Dentists are considered as highest rate to have MSD. Dentists reported the highest prevalence to have neck pain .50% of dentists reported neck pain according to NDI the majority were reported due to work pressure.

Nurses were at high risk of having MSP .89% of nurses of PHC reported WRMSDs. It is found that lack of awareness and knowledge is seen among them. Surgeons have the most responsible duty that they have to perform for hours. They preferably ignore their body positioning during performing surgery for years which results in generalized pain in the neck and shoulder etc. Obstetrics and gynaecology staff were reported an 85.5% prevalence to have MSD. Neck was most affected region in the body. 18-78% were reported neck pain in medical laboratory technicians. Hospital staff working on the computer harm health due to non-ergonomic posture neck pain reported highest in number.

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