

Use of Physical Restraints in Neurosurgery: Guide for a Good Practice

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1. Introduction

Physical restraints are widely used in hospitals in many countries, especially during critical care, against a range of difficult clinical situations. They are intended to protect patients and their relatives from any harm to themselves: falling from beds, removing tubes, drains, and medical equipments from their bodies, and to ease patients' control (Bower & McCullough, 2000).

Weaning from artificial ventilation, recovering from acute illness can be a long and difficult process. The problem with critically ill patients is re-sedation, often needed to handle agitation and avoid treatment interference (Cohen et al., 2002). Sedatives lengthen hospitalization and complicate recovery (Westcott, 1995); therefore, the management of these patients can often be a dilemma (Hine, 2007).

1.1 What is a restraint?

Physical restraint is (American Nurses Assosication, 2001) "any chemical or physical involuntary method restricting an individual's movement, physical activity, or normal access to the body."

Physical restraint is also defined as any device, material, or equipment attached to or near a person's body, neither controlled nor easily removed by a patient and that deliberately prevents or intended to prevent free body movement to a position of choice or patients normal access to their body (Retsas, 1998).

1.2 History of physical restraint

Physical restraint use in acute and intensive cares dates back long. While actions –against restraint were taken in England and France during the 19th century, its use in acute care settings in the US was assumed as a therapeutic and morally correct approach against accidents and injures (Bower & McCullough, 2000). In the 1980s, physical restraint applications in acute care settings were on general medical-surgical units (Frengley & Mion, 1986; Lofgren et al., 1989; Mion et al., 1989; Robbins et al., 1987).

Restraint use has become a legal issue with individual rights becoming paramount in the society. First in the USA, federal restraint standards were implemented in 1984 (U.S.

Department of Health and Human Services, 1984). The Mental Health Act of 1983, Wales, (Department of Health and Welsh Office, 1999) named five common reasons to use the restraint, of which three were the most relevant in critical care settings: noncompliance with treatment, self-harm, and risk of a physical injury by an accident. Canada and British Columbia have legislations (Currie, 1997). While the UK, however, does not accept physical restraint use at all, it is common in the US, Australia, and Europe (Maccioli et al., 2003; Royal College of Nursing, 2004; Van Norman & Palmer, 2001). Nurses and scientists from other disciplines tried to agree on physical restraint use starting in 1988 no consensus reached yet on its use in hospitals (Bower & McCullough, 2000).

2. Alternative procedures

Other strategies to manage agitation include :

- Sedation: agitation is often managed with the use of sedatives or antipsychotic drugs ; however, drugs could ultimately lead to further agitation and a vicious circle ensues. The overuse of sedatives could also complicate a patient's recovery by causing hypotension and apnea and by exposing the patient to risks associated with immobility (Westcott, 1995; Woodrow, 2000).
- Communication with patients, relatives
- Touch
- Involvement of family
- Massage
- Acupuncture (Bray et al., 2004)

2.1 Barriers hindering restraint elimination

Research has clearly established that physical restraints can be injurious both physically and mentally for inhabitants, cost more resources, and increase serious injuries.

Barriers to shortening the restraint use included: fear of patient injury, staff and resource restrictions, lack of education and information about alternatives to restraints, policy and management issues, beliefs and expectations (of staff, family and residents), inadequate review practices and statement barriers (Moore & Haralambous 2007).

Perceived barriers to individualized care identified were insufficient staff, safety and authoritarian concerns, lack of team collaboration and phone call, lack of participation by the nursing assistants for care planning, and staff and family attitudes (Walker et al., 1999).

Staff or family attitudes and fears can stop success with restraint elimination measures. The restraint team should be practical and provide education and resources, permit individuals to express their fears and suspicions, and encourage active involvement in designing the plan of care. Approaching restraint decline with an incremental plan allows caregivers to conquer their fears and resistance. Beginning with one unit at a time or starting with the easiest residents and working toward the more difficult may make the task of restraint reduction more reasonable (Castle & Mor, 1998). The successful interventions will allow staff and family members to become more relaxed and convinced with the removal of restraints.

3. Indications and contraindications

Physical restraints are indicated for patient safety and avoiding falls, but the most widespread reason is to put off the taking away of invasive tubes and devices (Fletcher, 1996; Cruz et al., 1997; Minnick et al., 1998; Happ, 2000; Choi and Song 2003). Patients might need repeatedly to be self-extubated while patients was physically restrained (Balon 2001) and restrained patients of self-extubation rate were 77% (Birkett et al, 2005) .

Delirium and agitation been the most frequent hospital complications in 'older' patients, resulting in poor hospital outcomes and increased morbidity and death (Ely et al., 2001), physical restraints are frequently used in this setting, ranging in the literature between 8-68% for hospitalized elderly people (Hamers & Huizing 2005).

3.1 The use of physical restraint in critical care

The intensive care environment itself may grow added stress and agitation, caused by mechanical ventilation, invasive procedures, pain, fear, anxiety, sensory overload and sleep cycle disruptions (Haskell et al., 1997). Incidence of agitation rose because of higher number of of older and more severely ill patients in intensive care units (ICU) (Cohen et al., 2002). However, the prevalence of agitation and delirium in ICU varied between 15 - 87% of patients (Sanders et al., 1992; Ely et al., 2001; Roberts, 2001). This variation could be due to numerous factors and definitions utilized to describe altered mental status: delirium, acute confusional state, sundown syndrome, ICU psychosis and ICU delirium (Haskell et al., 1997).

Agitated patients exhibits constant fidgeting and movement; pulling at bed sheets, invasive devices and catheters; trying to get out of bed; shouting and hitting and were disorientated to the time and the place (Haskell et al., 1997; Cohen et al., 2002). The agitations in critically ill adults are associated with potentially dangerous complications: self-extubation (self-removal of endotracheal tube), removal of arterial and venous lines and non-compliance with life-saving treatment (Cohen et al., 2002; Nirmalan et al., 2004). Ultimately, the presence of agitation delayed weaning from ventilation and lengthened ICU stay (Westcott, 1995; haskell et al., 1997; Cull & Inwood, 1999; Cohen et al., 2002).

Systematically reviewed physical restraint use ranged 3.4- 21% in acute care patients, who were physically restrained for 2.7 to 4.5 days during their hospitalization. The range in residential care settings was between 12%, 47%, and 32%, respectively. The restraint applied was 20 days at least in each month (Evans et al., 2002). Patients were restrained at 6-13%, with higher rates (18- 22%) as well for people 65 years or older. The most common reason for physical restraint was to prevent falls (up to 77%) and disruption of therapy (up to 40%) (MacPherson et al., 1990; Mion et al., 1989). Rates varied in different countries: less than 9% in Denmark, Iceland, and Japan; between 15- 17% in France, Italy, Sweden, and the US, the highest use, almost 40% in Spain (Ljunggren et al., 1997).

However, physical restraint is contraindicated edema and cyanosis, pressure ulcers, aspiration and breathing problems, agitation, contractures, fractures, paralyz and most importantly if the informed consent is not obtained from patients or surrogates (Demir, 2007a; Demir, 2007b).

4. Key step of the procedure

4.1 Types of physical restraints

There are a number of kinds of restraints. The most common restraint devices are wrist restraints (Minnick et al., 1998, Happ, 2000), ankle restraint (Demir, 2007a) and chest or waist restraints (Carrion et al., 2000; Demir, 2007a). Boxing gloves or mittens, involved wrapping the hands in bandages to prevent free use of the fingers (Fletcher, 1996; Nirmalan et al., 2004), therefore preventing the patient from grabbing and pulling at tubes and lines (Demir, 2007a), are also popular. Among the most frequent for adults are jacket restraints, belt restraints, mitt for hand restraints, and limb restraints. Restraints for infants and children include mummy restraints, elbow restraints and crib nets (Kozier et al., 2004).

Jacket (body restraint): A sleeveless vest with straps that cross in front or back of the patient and are tied to the bed edge or chair legs.

Belt: Straps or belts applied transversely the patient to save him or her to the stretcher, bed, or wheelchair.

Mitten or hand: Enclosed cloth fabric applied over the patient's hand to put off injury from scratching

Elbow: A combination of cloth and plastic or wooden tongue blades that halt the elbow to prevent flexion.

Limb or extremity: Cloth devices that stop one or all limbs by firmly tying the restraint to the bed frame or chair.

Mummy: A blanket or sheet that is folded around the child to bound the movement. Mummy restraints are used to execute procedures on children.

4.2 General principles for the care of restrained patients

- The purpose of restraint is to provide optimal care of the patient,
- Use of restraint must not be an alternative to insufficient human or other resources
- Restraint should only be used when alternative therapeutic measures have seemed ineffective to acquire the desired outcome,
- Decisions regarding use or non-use of after a detailed patient assessment, by an interdisciplinary team,
- Critical care areas must develop and implement protocol/guidelines in order to aid nurses and others,
- Whatever form of restraint is used there must be suitable, continual evaluation tools used and the findings acted upon,
- Clear, concise documentation of decisions, plans and treatment must be kept within the patients' record,
- The patient and their family should be engaged within discussions to inform them of the reason for choice of the restraint method,
- Schooling all staff regarding chemical, physical and psychological restraint must take in training and competency programs in critical care units (BACCN position in Bray et al., 2004).

4.3 Application guidelines

- Obtain consent from the patient and surrogate,
- Enlighten rationale for application of restraint,
- Select the appropriate type of restraint,
- Assess skin for discomfort,
- Apply restraint to patient assuring some movement of body part. One to two fingers should slide between restraint and patient's skin. Tie straps securely with clove hitch knot,
- Lock restraint to bed frame; do not tie the straps to the side rail,
- Assess restraints and skin integrity every 30 minutes,
- Discharge restraints at least every 2 hours,
- Continually appraise the need for restraints (at least every 4-8 hours),
- Guarantee that a physician's order has been provided or, in an emergency, obtain one within 24 hours after applying the restraint,
- Assure the patient and the patient's people that the restraint is impermanent and protective,
- Apply the restraint in a way that the patients can move as freely as possible without defeating the idea of the restraint,
- Ensure that limb restraints are applied securely but not so tightly that they obstruct blood flow to anybody area or extremity,
- Pad bony prominence (e.g., wrist and ankles) before applying a restraint over them. The movements of a restraint without stuffing over such prominences can quickly erode the skin,
- Constantly tie a limb restraint with a knot (e.g., a clove hitch) that will not tighten when pulled,
- Tie the ends of a body restraint to the part of the bed that moves to lift the head. Never tie the ends to a side rail or to the set frame of the bed if the bed position is to be altered,
- Assess the restraint every 30 minutes. Some services have specific forms to be used to document ongoing assessment,
- Free all restraints at least every 2 to 4 hours, and provide range-of-motion train and skin care,
- Reassess the continued requirement for the restraint at least every 8 hours. Embrace an assessment of the fundamental source of the behavior necessitating use of the restraints,
- When a restraint is momentarily removed, do not leave the client alone,
- Instantly report to the nurse in charge and record on the client's chart any constant reddened or broken skin areas under the restraint,
- At the first sign of cyanosis or pallor, coldness of a skin area, or a client's complaint of a tingling feeling, pain, or numbness, release the restraint and exercise the limb,
- Apply a restraint so that it can be freed quickly in an emergency and with the body part in a typical anatomic position,
- Offer emotional support verbally and through touch (Kozier et al., 2004, Taylor et al., 1997).

4.4 JCAHO restraint standards for non-psychiatric patients

Special Conditions When Restraint Is Applied:

- Based on important alteration in the patient's state with the physician notified immediately and written orders obtained within 24 hours

- Initiated by a registered nurse
- Based on protocols customary for situations where patients may hurt themselves if staff initiate, maintain, and terminate restraint without an order from autonomous practitioner

Organizational Perspective:

- Be specific for each institution
- Exhibit clinical justification
- Exhibit the use of innovative alternatives
- Outline preventive strategies
- Name ways to reduce risks associated with restraint use

Policies/Procedures/Protocols:

- Be clearly declared
- Advocate use of least limiting measures

Preventive Strategies:

- Identify potentially risky patient behaviors
- Identify efficient and tried alternatives

Plan of Care

- Individualized and guarantee patient's assessed needs are met
- Conserve patient's rights, dignity, and well-being

Education:

- Be continuing for staff and patient
- Be provided to families when fitting

Initiation and Monitoring of Restraint Use:

- Based on state law
- Initiated based on individual orders or approved
- Protocols with written physician order obtained within 12 hours
- Applied/monitored/assessed/reassessed by qualified staff
- Monitored at least every 2 hours
- Obtained a new permission for every 24 hours when continuous restraint is used

Documentation:

- Incorporate all restraint episodes according to organizational policies and procedures
- Record, at a minimum, every 2 hours
- Specify alternatives tried before restraints were applied
- Write in into the patient's medical record

Key elements of restraint documentation

- Reason for the restraint
- Method of restraint
- Application: Date, time, and patient's response

- Duration
- Frequency of observation and patient's response
- Safety: Release from restraint with periodic, routine exercise and assessment for flow and skin integrity
- Assessment of the continuous demand for restraint
- Patient outcome

5. Complications of physical restraint

Increasing awareness of its negative effects and its limited efficacy in the last decade reduced the use of physical restraint. One hundred deaths in the USA occur annually in addition to higher hospital infection rates and injuries by improper physical restraint. Moreover, patients under physical restraint lost muscle strength, had pressure ulcers, incontinence, strangulation (Taylor et al., 1997), and were severely agitated, confused, depressed, angry, fearful, confused, panicked, and experienced sleeping difficulties, loss of role, shyness, body disformation, resistance or objection to daily routine activities, higher disorganized behaviours, cognitive and behavioural problems due to changes in blood chemistry, and loss of self-trust and respect (Bonner et al., 2002; Bray et al., 2004; Cannon et al., 2001; Castle, 2002; Choi & Song, 2003; Evans et al., 2002, 2003; Hem et al., 2001; Koch & Lyon, 2001; Shorr et al., 2002; Swauger & Tomlin, 2000). Avoiding physical injuries by physical restraint is only possible through improved quality of care. The rules were by the Health Care Financing Administration in 1987 and Joint Commission on Accreditation of Healthcare Organizations (JCAHO; Taylor et al., 1997). Government and accreditation organizations have supported the decisions on physical restraint use in the last 15-20 years because of increased significance of patients' rights.

Over the last 20 years there has been an increasing evidence supporting the reduction of restraints' use of. Some complications reported by Demir (2007a) were: edema and cyanosis by wrist and arm restraints, pressure ulcers, aspiration and breathing problems caused by sheet and belt pressure on chest, head hits by angry patients on bed sides, contractures of joints, and rejecting meals. Nine patients were suffocated when tied up with sheet on the chest, two had humerus fractures, two needed head skin sutures after falling out of bed, and one was paralyzed after being tied to the bed by the arms.

Atrioventricular irregularities in elderly patients on whom limb and vest restrained were observed (Evans et al., 2003). After longer periods of agitation, tachycardia and deaths were experienced. Mott et al. (2005) stated that physical restraint did not fully serve the purpose and increased agitation. Sullivan-Marx and colleagues' (1999) reported a higher risk of falls and strangulation (Lee et al., 1999) as well. Time restrained patients spent in hospitals were longer than unrestrained patients and experienced higher risks of complications, lower discharges from hospitals, and higher death risks (Arbesman & Wright, 1999; Clary & Krishnan, 2001; Paterson et al., 2003).

Asphyxiation, the most common cause of restraint related death, is termed as "restraint asphyxia" in the forensic and emergency literature by Reay (1998). Death occurred in approximately 12% of cases of a total of 214 episodes of hobble tying in agitated delirium (Stratton et al., 2001). There were various reports: 131 deaths to the FDA, USA, from 1987-1996, for the manufacturers of protective restraints (Morrison, 1997) , 58 asphyxia

occurrences out of 770 cases and 44 wheel chair related fatal accidents out of 58 cases (Calder & Kirby 1990), also reported. Higher physical restraint with agitation, more complications and frequent fell down (Shorr et al., 2002).

6. Ethical and legal considerations on restraint use

All nurses (/health professionals) have a duty to safeguard and protect their patients from harm. The nurse's moral obligation is to do no harm (non-maleficence) and promote good (beneficence). It might also be conflicting for critical care nurses, when they are to maintain a safe environment for agitated and delirious patients and also the potentially lifesaving technological devices. The picture is even more complex by the nurse's obligation to ensure patient freedom, dignity, and autonomy (Reigle, 1996). Since everyone has the right to be free from forced restraint of movement, torture or degrading treatment (HMSO, 1998), nurses have to justify use of physical restraint (Kapp, 1996). However, the literature contained very little evidence of restraints providing protection. So researchers debates just how ethical are the use of physical restraints.

The nurse's responsibility is to respect patient autonomy, whereas the use of physical restraint violates the principles of informed consent. Since restraint is a non-validated therapy, their use is considered investigational and a higher standard of informed consent should be required (Moss & LaPuma, 1991). Providing informed consent implies that the patient is competent to take the information on board; however, if physical restraint is being considered, the patient is probably agitated and less likely to have the capacity to give informed consent (Royal College of Nursing, 2004). Although the Department of Health (2001) guidelines are clear that no one is able to give consent on behalf of another, communication with the patient and the relatives on the rationale for restraint remains paramount. The reasonable person' rule can be applied in such cases, which enables a professional to act in the best interests of the patient (Beauchamp & Childress, 2001). A reasonable person is the one who would wish to be treated for life-threatening conditions even not able to give consent (Dimond , 2002). When there are other available alternatives, however, health care professionals should not assume that a reasonable person would wish to be physically restrained. Admittedly, the alternatives include other methods of restraint in the form of sedation, which itself can prolong and complicate a patient's recovery.

The Mental Capacity Act (Department of Constitutional Affairs, 2005) states that anything done for or on behalf of individuals without capacity, for example restraint, must be the least restrictive of their basic rights and freedoms and be in their best interests. If restraint is to be in the patient's best interest, health care professionals must have been satisfied by all legal and ethical implications, since otherwise they might face allegations of assault (Department of Health, 2001). Crucial differences exist between restraint that violates rights and dignity and restraint that does not violate any autonomously expressed wishes protects the patient from self-harm and is in the patients' best interests (Nirmalan et al., 2004). However, the evidences discussed previously, exposing the patient to potential harmful effects from restraint is in their best interests is debatable.

6.1 Informed consent

Consent from patients or surrogates for all healthcare activities and medical treatments are a must since fundamental moral duty forbids any actions against a person's wishes and

dignity. Informed consent thus entails a shared decision by both patient and health professional (Andanda, 2005). If a patient has a doubtful capacity, health care professionals have to take necessary steps against deterioration first and then consider capacity and consent matters (English et al., 2004).

Informed consent is widely recognized in international guidelines (Bandman & Bandman, 2002; International Council of Nurses, 2001) and in legislation (Department of Health and Welsh Office, 1999). There are four basic elements of informed consent, developed starting with Nuremberg trials (Andanda, 2005), which are also valid for patient care:

- “Capacity to consent;
- Full disclosure of relevant information;
- Adequate comprehension of the information by the participant;
- Voluntary decision to participate and withdraw from participation at any stage without prejudice of the participant. Participant withdrawal should be accepted and withdrawing participants should not be expected to give any reasons for their decision.”

One could evaluate informed consent well only if she has a good understanding of human rights and ethics. Human rights are defined by the American Nurses Association (ANA) as “assertions that call for treating human beings as ends in them, rather than as goals or purposes of others” (Bandman & Bandman, 2002). Ethical principles, of which three guides for all care activity used by nurses are the following: respect for persons, beneficence, and justice. These principles were at the US federal level in the Belmont Report in 1979 (The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (NCPHS)) (Burns & Grove, 1999). The dignity and rights of the patient are before the goals of any research or anything since many medical or nursing cares, though acceptable, could be harmful or outweigh the expected benefits (English et al., 2004).

The recent studies on informed and shared decision within clinical care have revealed a pronounced tension among three competing factors:

- Paternalistic conservatism about information exposé to patients has been worn by moral arguments and largely established by the medical profession,
- While many patients may wish to be given information about available treatment options, many also emerge cognitively and psychologically too ill to understand and to hold it, and
- Even when patients do comprehend information about likely treatment options; they do not essentially wish to make such choices themselves and might prefer to leave final decisions to the clinicians.

The second and third factors apparently disagree with the first and make the case more difficult (Doyal, 2001).

Physical restraint has become a common method for difficult clinical situations in hospitals although it has been well recognized in years that nurses should obtain consent from the patient before any nursing care procedure (Bandman & Bandman, 2002; Aveyard, 2005). Similarly, informed consent has become a common method of protecting patients and health care givers as well (Kanerva, 1999) from unexpected cost of physical restraint use, because of increased concern for human and patient rights in the USA and the UK. While physical

restraint is required or essential in patients with unsatisfactory mental (Bridgman & Wilson, 2000) or decision-making capacity (Harrison et al., 1997) or psychiatric patients, informed consent is still a must and be, at least, obtained from surrogates (Usher & Arthur, 1998). In other words, a patient at any stage, or under any circumstances is to agree or to disagree with a certain treatment (Beauchamp & Childress, 2001).

Some codes of ethics and regulations are in use in a variety of countries but there are few in Turkey. Only existing code is "Medicine and professional ethics", which was accepted in 1960 and later revised in 1998 (Turkish Medical Association, 1999). The Patients' Rights Regulations placed into effect by the Ministry of Health in August 1998 is the first and only regulation (The General Directorate of Development of Regulations and Publishing, 1998). The content of these is similar to the Declaration on the Promotion of Patients' Rights' in Europe (World Health Organization, 1994). More, however, has to be implemented in Turkey to avoid misguided / misused physical restraint without informed consent and its consequences of legal challenges for maltreatment, negligence, or human rights. However, Demir-Zencirci (2009) stated that most of nurses in her study (97.6%, n= 248) used physical restraint without informed consent.

The aim of informed consent is to protect the autonomous choices of vulnerable persons such as physically restrained patients. Informed consent for medical interventions should be based on size and likelihood of the risks associated with the proposed intervention. As the risks associated with the use of physical restraints are significant, consent for their use is crucial (Reigle, 1997).

7. Illustrative cases

Case 1

A 21 year old male patient was hospitalized in neurosurgery because of a car accident resulted in depressed fracture on left temporal and subarachnoid hemorrhage. Three-four cm laceration existed on right deltoid anterior. When arrived to Emergency Unit via 112, he experienced extensive respiratory distress and higher arterial blood pressure. Ear Nose Throat Department failed to insert endotracheal tubes, therefore, opened tracheostomy. He was unconscious and his orientation and cooperation were not assessed. The patient had extensor on the upper extremity and flexor attracts on the lower extremity via painful stimuli. Vital signs were, later on, normalized. White blood cells were too high (29.200/L), SaO₂ was 94.3%, blood ph was 7.34, Gag reflex was positive, and no neck stiffness. Patient was physically restrained on wrists and ankles.

Application

- Provided a physician order.
- Explained to the surrogate what you are going to do, why it is necessary, and how they cooperate.
- Discussed with the surrogate how the results will be used in planning further care or treatments.
- Allowed time for the surrogate to express feelings about being tied/restrained.
- Provided needed emotional reassurance that the restraints will be used only when absolutely necessary and that there will be close contact with the surrogate in case assistance is required.

- Provided a written informed consent from his legal surrogate/his father.
- Washed hands and observed appropriate infection control procedures.
- Provided for patient privacy.
- Applied the wrist and ankle restraint with cotton ties.
- Pad put on bony prominences on the wrist and ankle for to prevent skin abrasion.
- Pulled the tie of the restraint through the slit in the wrist portion or through the buckle.
- Assessed restraints and skin integrity every 30 minutes.
- Discharged restraints at least every 2 hours.
- Appraised the need for restraints for every 4-8 hours.
- Stopped the restraint and applied the exercises on the limb and changed the position for there was cyanosis and pallor, coldness of a skin area.

Mr. A was discharged on foot from neurosurgery intensive care units after 29 days. Physical restraint was applied only 24 days and no complications occurred.

Case 2

A 51 year old female patient with headache, nausea and vomiting got in to the acute care settings. Patient has experienced lethargy and vomiting for three days. She has been brought to the hospital because of increased lethargy. Findings were confusion, lethargic, roughly intact cranial nerves. She reflected no pathologic reflex. Hiperdans parallel with subarachnoid hemorrhage on cranial ct and aneurysmal dilatation on Distal Middle Cerebral Artery were observed. Patient was hospitalized and in neurosurgery intensive care unit and anti-edema and antiepileptic therapy were initiated.

Confusional, defective orientation and co-operation are observed. Four fifth muscle strength, no pathologic reflex, and (+) neck stiffness. Blood values: Aspartate Aminotransferase (AST) and Gamma Glutamyl Transferase (GGT), Blood urea nitrogen and Creatinine high at range, hemoglobin low at range.

Patient was physically strained on right elbow and ankle.

Aplication

- Provided a physician order.
- Explained to the surrogate what you are going to do, why it is necessary, and how they cooperate.
- Discussed with the surrogate how the results will be used in planning further care or treatments.
- Allowed time for the surrogate to express feelings about being tied/restrained.
- Provided needed emotional reassurance that the restraints will be used only when absolutely necessary and that there will be close contact with the surrogate in case assistance is required.
- Provided a written informed consent from her legal surrogate/her husband.
- Washed hands and observed appropriate infection control procedures.
- Provided for patient privacy.
- Applied the wrist and ankle restraint with cotton ties.
- Pad put on bony prominences on the wrist and ankle for to prevent skin abrasion.
- Pulled the tie of the restraint through the slit in the wrist portion or through the buckle.

- Assessed restraints and skin integrity every 30 minutes.
- Discharged restraints at least every 2 hours.
- Appraised the need for restraints for every 4-8 hours.
- Stopped the restraint and applied the exercises on the limb and changed the position for there was cyanosis and pallor, coldness of a skin area.

Mrs. A has been still unconscious, aphasic and agitated, and continues to physically restraint on right wrists and ankles. She was discharged on bed from neurosurgery intensive care units after 35 days. Physical restraint has been still applied at your home. Mrs. A has a stage II pressure ulcers on coccyx and abrasion and edema on your wrist and ankle.

8. Conclusion

Physical restraint may be highly associated with nurses' monitoring and patients may suffer serious complications. Enhancements in intensive and acute care settings and in nurse staffing and education are necessary. Like many people, we believe that using physical restraint to control disruptive patient behaviors before alternative methods are tried or to compensate for shortages in nursing staff is unethical and unacceptable. In these conditions, use of physical restraints is an anathema to best practice principles, a denial of patient autonomy and beneficent professional health care practice principles. Nurses first have to consider patients' requests and needs if they wish to provide optimal care for patients/relatives.

Professional nursing practice accepts that the use of physical restraints is occasionally unnecessary, harmful, and potentially deadly (Demir 2007a). Physical restraint used by nurses sometimes violates patients' autonomy or self respect and causes patients to lose their trust to the nurses. One should agree that physical restraint is an unethical assault on patients' rights and should be used carefully after alternative methods are tried (Demir-Zencirci-2009).

If physical restraint is used without enough care, it might result in life-threatening conditions, some of which were reported by respondents. Therefore, physical restraint without consent should not be used without physician orders or expert consultation. Last but not the least; nurses have always to remember that their responsibility is to offer optimal care to society and humankind, and best care to patients.

9. References

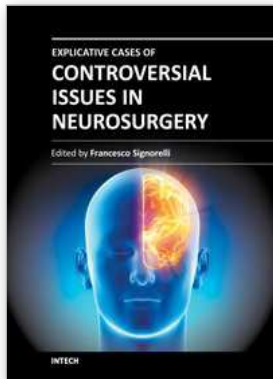
- American Nurses Association. (2001). Ethics and Human Rights Position Statements: Reduction of Patient Restraint and Seclusion in Health Care Settings. Available at: <http://www.nursingworld.org/MainMenuCategories/EthicsStandards/Ethics-Position-Statements/prtetrestnt14452.aspx> (accessed 27 July 2011).
- Andanda, P. (2005). Module two: informed consent. *Dev World Bioeth*, 5:14- 29, ISSN 1471-8847
- Arbesman, M.C. & Wright, C. (1999). Mechanical restraints, rehabilitation therapies, and staffing adequacy as risk factors for falls in an elderly hospitalised population. *Rehabilitation Nursing*, 24, 122-128, ISSN
- Aveyard, H. (2005). Informed consent prior to nursing care procedures. *Nurs Ethics*, 12:19-29, ISSN 0969-7330
- Balon, J. A. (2001). Common factors of spontaneous self-extubation in a critical care setting. *International Journal of Trauma Nursing*, 7 (3), 93-99. ISSN: 1075-4210

- Bandman, E.L. & Bandman, B. (2002). Ethical Issues in the Nursing Care of Elderly. *Nursing Ethics Through the Life Span*. (4th ed). London: Prentice- Hall International, p.233-59, ISSN 0-8385-6976-5
- Beauchamp, T.L. & Childress, J.F. (2001). Moral Theories. *Principles of Biomedical Ethics*. (5th ed.) New York: Oxford University Press, p: 337-77, ISSN 0-19-514332-9
- Birkett, K.M.; Southerland, K.A. & Leslie, G.D. (2005). Reporting unplanned extubation. *Intensive Crit Care Nurs*,21:65-75; ISSN 0964-3397
- Bonner, G.; Lowe, T.; Rawcliffe, D. & Wellman, N. (2002). Trauma for all: A pilot study of the subjective experience of physical restraint for mental health inpatients and staff in the UK. *Journal of Psychiatric and Mental Health Nursing*, 9, 465-473. ISSN 1351-0126
- Bower, F.L. & McCullough, C.S. (2000). Restraint use in acute care settings: Can it be reduced? *Journal of Nursing Administration*, 30, 592-598, ISSN 0002-0443
- Bray, K.; Hill, K.; Robson, W.; Leaver, G.; Walker, N.; O'Leary, M.; Delaney, T.; Walsh, D.; Gager, M. & Waterhouse, C. (2004). British association of critical care nurses position statement on the use of restraint in adult critical care units. *Nursing in Critical Care*; 9: 199-211. ISSN: 1478-5153.
- Bridgman, A.M. & Wilson, M.A. (2000). The treatment of adult patients with mental disability. Part 1: Consent and duty. *British Dental Journal*, 189: 66-8, ISSN: 0007-0610
- Burns, N. & Grove, S.K. (1999). Examining Ethics in Nursing Research. In: Understanding Nursing Research. 3rd ed. Philadelphia: WB Saunders Co, p: 159-92, ISSN 0-7216-0011-5
- Calder, J. & Kirby, R.L. (1990). Fatal wheelchair-related accidents in the United States. *American Journal of Physical Medicine and Rehabilitation*, 69, 184-190, ISSN 0894-9115
- Cannon, M.E.; Sprivilis, P. & McCarthy, J. (2001). Restraint practices in Australasian emergency departments. *Australian and New Zealand Journal of Psychiatry*, 35, 464-467, ISSN 0004-8674
- Carrion, M.I.; Ayuso, D.; Marcos, M.; Robles, M.P.; De La Cal, M.A.; Alia, I. & Esteban, A. (2000). Accidental removal of endotracheal and nasogastric tubes and intravascular catheters. *Critical Care Medicine*, 28: 63-66. ISSN: 0090-3493
- Castle, N.G. & Mor, V. (1987). Physical Restraints in Nursing Homes: A Review of the Literature Since the Nursing Home Reform Act of 1987. *Medical Care Research and Review*, 55: 139-170, ISSN: 1077-5587
- Castle, N.G. (2002). Nursing homes with persistent deficiency citations for physical restraint use. *Medical Care*, 40: 868-878, ISSN 0025-7079
- Choi, E. & Song, M. (2003). Physical restraint use in a Korean ICU. *Journal of Clinical Nursing*, 12, 651-659. ISSN: 0962-1067
- Clary, G. & Krishnan, R. (2001). Delirium: Diagnosis, neuropathogenesis and treatment. *Journal of Psychiatric Practice*, 7, 310-323, ISSN 1527-4160
- Cohen, I.L.; Gallagher, T. J.; Pohlman, A.S.; Dasta, J.F.; Abraham, E. & Papadokos, P.J. (2002). Management of the agitated intensive care unit patient. *Critical Care Medicine*, 30 (suppl.): S97-S123, ISSN 0090-3493
- Cruz, V.; Abdul-Hamid, M., Heater, B. (1997). Research-based practice: reducing restraints in an acute care setting - phase I. *Journal of Gerontological Nursing*, 23: 31-40, ISSN 0098-9134
- Cull, C. & Inwood, H. (1999). Weaning patients from mechanical ventilation. *Professional Nurse*, 14: 535-538, ISSN 0266-8130
- Currie, H.H. (1997). Cruel and unusual? The implications of section 12 of the Canadian charter of rights and freedoms on restraint use in care facilities. *Unpublished Master of Arts Thesis*. Simon Fraser University, Burnaby, BC, Canada.
- Demir, A. (2007a). Nurses' Use of Physical Restraints in Four Turkish Hospitals, *Journal of Nursing Scholarship*, 39: 38-45, ISSN: 1527-6546

- Demir, A. (2007b). The Use of Physical Restraints on Children: Practices and Attitudes of Paediatric Nurses in Turkey, *International Nursing Review*, 54: 367-374, ISSN 0020-8132
- Demir-Zencirci, A. (2009). Attitudes, informed consent obtaining rates and feelings about physical restraint use among nurses, *Turkiye Klinikleri Journal of Medical Sciences*, 29:1571-1581, ISSN 1300-0292
- Department of Constitutional Affairs. (2005). Mental Capacity Act.
<http://www.dca.gov.uk/menincap/legis.htm> (accessed 20/01/06).
- Department of Health and Welsh Office. (1999). Mental Health Act 1983 Code of Practise. London: Department of Health.
- Department of Health. (2001). Reference Guide to Consent for Examination or Treatment. London: Department of Health.
- Dimond, B. (2004). *Legal Aspects of Nursing*, 4rd edn. London: Longman, ISSN 0582822785
- Doyal, L. (2001). Informed consent: moral necessity or illusion? *Qual Saf Health Care*, 10(Suppl I):i29-i33, ISSN 2044-5415
- Ely, E.W.; Margolin, R.; Francis, J.; May, L.; Truman, B.; Dittus, R.; Speroff, T.; Gautam, S.; Bernard, G.R. & Inouye, S.K. (2001). Evaluation of delirium in critically ill patients: validation of the confusion assessment method for the intensive care unit (CAM-ICU). *Critical Care Medicine*, 29: 1370-1379, ISSN 0090-3493
- English, V.; Romano-Critchley, G.; Sheather, J. & Sommerville, A. (2004). Treatment without Consent: Incapacitated Adults and Compulsory Treatment. Medical Ethics Today The BMA's Handbook of Ethics and Law. 2nd ed. London, BMJ Publishing Group, p:99-126, ISBN: 978-0-7279-1744-7
- Evans, D.; Wood, J. & Lambert, L. (2003). Patient injury and physical restraint devices: A systematic review. *Journal of Advanced Nursing*, 41: 274-282, ISSN 0309-2402
- Evans, D.; Wood, J., Lambert, L. & FitzGerald, M. (2002). Physical restraint in acute and residential care: A systematic review. Adelaide, Australia: *The Joanna Briggs Institute*.
- Fletcher, K. (1996). Use of Restraints in the Elderly. *AACN Clinical Issues*, 7: 611-620, ISSN 15597768
- Frengley, J. D. & Mion, L. C. (1986). Incidence of physical restraints on acute general medical wards. *Journal of the American Geriatrics Society*, 34: 565-568, ISSN 1532-5415
- Hamers, J.P.H. & Huizing, A.R. (2005). Why do we use physical restraints in the elderly? *Zeitschrift für Gerontologie und Geriatrie*, 38:19-25, ISSN 0948-6704
- Happ, M. B. (2000). Preventing treatment interference: the nurse's role in maintaining technologic devices. *Heart and Lung*, 29: 60-69, ISSN: 0147-9563
- Harrison, C.; Kenny, N.P.; Sidarous, M. & Rowell, M. (1997). Bioethics for clinicians: 9. Involving children in medical decisions. *CMAJ*, 156(6):825-8, ISSN 0820-3946
- Haskell, R.B.; Frankel, H.L. & Rotondo, M.F. (1997). Agitation. *AACN Clinical Issues*; 8: 335-350, ISSN 1079-0713
- Hem, E.; Steen, O. & Opjordsmoen, S. (2001). Thrombosis associated with physical restraints. *Acta Psychiatrica Scandinavica*, 103, 73-76, ISSN 0001-690X
- Hine, K. (2007). The use of physical restraint in critical care. *Nursing in critical care*, 12: 6-11, ISSN 1478-5153
- HMSO. (1998). Human Rights Act. London: HMSO, ISSN 0-10-544298-4.
- International Council of Nurses. The ICN code of ethics for nurses. *Nurs Ethics* 2001;8(4): 375-9, ISSN 0969-7330
- Jensen, B.; Hess-Zak, A.; Johnston, S.K.; Otto, D.C.; Tebbe, L.; Russell, C. & Waller, A. (1998). Restraint reduction: A new philosophy for a new millenium. *Journal of Nursing Administration*, 28: 32-38, ISSN 0002-0443

- Kanerva, A.M.; Suominen, T. & Leino-Kilpi H. (1999). Informed consent for short-stay surgery. *Nurs Ethics*, 6:483-93, ISSN 0969-7330
- Kapp, M.B. (1996). Physical restraint use in critical care: legal issues. *AACN Clinical Issues*; 7: 579-584, ISSN 1079-0713
- Koch, S. & Lyon, C. (2001). Case study approach to removing physical restraint. *International Journal of Nursing Practice*, 7:156-161, ISSN 1322-7114
- Kozier, B.; Erb, G.; Berman, A. & Snyder, S. (2004). Safety. In, *Fundamentals of nursing* (7th ed.) Upper Saddle River, NJ: Prentice Hall, ISSN 0-13-114229
- Lee, D.T.F.; Chan, M.C.; Tam, E.P.Y. & Yeung, W.S.K. (1999). Use of physical restraints on elderly patients: An exploratory study of the perceptions of nurses in Hong Kong. *Journal of Advanced Nursing*, 29, 153-159, ISSN 0309-2402
- Ljunggren, G.; Phillips, C. & Sgadari, A. (1997). Comparisons of restraint use in nursing homes in eight countries. *Age and Ageing*, 16, 43-47, ISSN 0002-0729
- Lofgren, R. P.; MacPherson, D. S.; Granieri, R.; Myllenbeck, S. & Sprafka, J. M. (1989). Mechanical restraints on the medical wards: Are protective devices safe? *American Journal of Public Health*, 79, 735-738, ISSN 0090-0036
- Maccioli, G.A.; Dorman, T. & Brown, B.R. (2003). Clinical practice guidelines for the maintenance of patient physical safety in the intensive care unit: Use of restraining therapies – American College of Critical Care Medicine Task Force 2001-2002. *Critical Care Medicine*, 31: 2665-2676, ISSN 0090-3493
- Macpherson, D.S.; Lofgren, R.P.; Cranieri, R. & Myllenbeck, S. (1990). Deciding to restrain medical patients. *Journal of the American Geriatrics Society*, 38,516-520, ISSN: 0002-8614
- Martin, B. (2002). Restraint use in acute and critical care settings: changing practice. *AACN Clinical Issues*; 13: 294-306, ISSN 1079-0713
- Minnick, A.F.; Mion, L.C.; Leipzig, R.; Lamb, K. & Palmer, R. (1998). Prevalence and patterns of physical restraint use in the acute care setting. *Journal of Nursing Administration*, 28: 19-24. ISSN 0002-0443
- Mion, L. (1996). Establishing alternatives to physical restraint in the acute care setting: a conceptual framework to assist nurses' decision making. *AACN Clinical Issues*, 7: 592-602, ISSN 1079-0713
- Mion, L. C.; Frengley, J. D.; Jakovic, C. A. & Marino, J. A. (1989). A further exploration of the use of physical restraints in hospitalized patients. *Journal of the American Geriatrics Society*, 37, 949-956, ISSN 1532-5415
- Moore, K. & Haralambous, B. (2007). Barriers to reducing the use of restraints in residential elder care facilities, *JAN*, 58(6), 532-540, ISSN 0309-2402
- Morrison, A. (1997). Device errors. Incorrect restraint use: Deadly protection. *Nursing*, 27: 32, ISSN 0360-4039
- Moss, R.J. & La Puma, J. (1991). The ethics of mechanical restraints. *Hastings Cent Rep*, 21:22-5, ISSN 0093-0334
- Mott, S.; Poole, J. & Kenrick, M. (2005). Physical and chemical restraints in acute care: Their potential impact on the rehabilitation of older people. *International Journal of Nursing Practice*, 11, 95-101, ISSN 1322-7114
- Nirmalan, M., Dark, P.M.; Nightingale, P. & Harris, J. (2004). Physical and pharmacological restraint of critically ill patients: clinical facts and ethical considerations. *British Journal of Anaesthesia*, 92: 789-792, ISSN 0007-0912
- Paterson, B.; Bradley, P.; Stark, C.; Saddler, D.; Leadbetter, D. & Allen, D. (2003). Restraint related deaths in health social care in UK: Learning the lessons. *Mental Health Practice*, 6, 10-17,
- Reay, D.T. (1998). Death in custody. *Clinics in Laboratory Medicine*, 18, 1-22, ISSN 0272-2712

- Reigle, J. (1996). The ethics of physical restraints in critical care. *AACN Clinical Issues*, 7: 585-591, ISSN 1079-0713
- Retsas, A.P. & Crabbe, H. (1998). Use of physical restraints in nursinghomes in New South Wales, Australia. *International Journal of Nursing Studies*, 35, 177-183, ISSN 0020-7489
- Robbins, L. J.; Boyko, E.; Lane, J.; Cooper, D. & Jahnigen, D. W. (1987). Binding older persons: A prospective study of the use of mechanical restraints in an acute care hospital. *Journal of the American Geriatrics Society*, 35, 290-296. 949-956, ISSN 1532-5415
- Roberts, B. L. (2001). Managing delirium in intensive care patients. *Critical Care Nurse*, 21: 48-54, ISSN 0279-5442
- Royal College of Nursing. (2004). Complementary therapies in nursing, midwifery and health visiting practice. RCN guidance on integrating complementary therapies into critical care. London: Author, Publication code 002 204
- Sanders KM, Stern TA, O'Gara PT, Field TS, Rauch SL, Lipson RE, Eagle KA. (1992). Delirium during intra-aortic balloon pump therapy. Incidence and Management. *Psychosomatics*; 33: 35-44. ISSN 0033-3182
- Shorr, R.I.; Guillen, M.K.; Rosenblaff, L.C.; Walker, K.; Caudle, C.E. & Kritchevsky, S.B. (2002). Restraint use, restraints orders, and the risk of falls in hospitalized patients. *Journal of the American Geriatrics Society*, 50, 526-529, ISSN 0002-8614
- Stratton, S.J.; Rogers, C. & Brickett, K. (2001). Factors associated with sudden death in individuals requiring restraint for excited delirium. *American Journal of Emergency Medicine*, 19, 187- 191, ISSN 0735-6757
- Sullivan-Marx, E.M.; Strumpf, N.E.; Evans, L.K.; Baumgarten, M. & Mailsin, G. (1999). Predictors of continued physical restraint use in nursing home residents following restraint reduction efforts. *Journal of the American Geriatrics Society*, 47, 342-348, ISSN 1532-5415
- Swauger, K.C. & Tomlin, C.C. (2000). Moving toward restraint-free patient care. *Journal of Nursing Administration*, 30: 325-329, ISSN 0002-0443
- Taylor, C.; Lillis, C. & LeMone, P. (1997). Safety. In, *Fundamentals of nursing* (3rd ed.; pp. 525-554). Philadelphia: Lippincott.
- The General Directorate of Development of Regulations and Publishing. Patients' Rights Regulations. TC Resmi Gazete 1998;23420: 67-76.
- Turkish Medical Association. (1999). Medicine and professional ethics. *Tip Dünyası* 45:1-2:(col 1-7).
- U.S. Department of Health and Human Services. (1984). Use of restraints: Federal standards. Washington, DC: Author.
- Usher, K.J. & Arthur, D. (1998). Process consent: a model for enhancing informed consent in mental health nursing. *J Adv Nurs*, 27:692-7, ISSN: 0309-2402
- Van Norman, G. & Palmer, S. (2001). The ethical boundaries of persuasion: Coercion and restraint of patients in clinical anaesthesia practice. *International Anaesthesiology Clinical*, 39, 131-143, ISSN: 0952-8180
- Walker, L., Porter, M., Gruman, C. & Michalski, M. (1999). Developing Individualized Care in Nursing Homes: Integrating the Views of Nurses and Certified Nurse Aides. *Journal of Gerontological Nursing*, 25: 30-5, ISSN: 0098-9134
- Westcott, C. (1995). The sedation of patients in intensive care units: a nursing review. *Intensive and Critical Care Nursing*, 11: 26-31, ISSN 0964-3397
- Woodrow, P. & Roe, J. (2006). *Intensive Care Nursing: A framework for practice*. London: Routledge, ISSN: 0-415-37322-0
- World Health Organization. (1994). A Declaration on the Promotion of Patients' Rights in Europe. European Consultation on the Rights of Patients. Amsterdam: WHO Regional Office for Europe, p:10-17.



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