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Assessment of the Risk Factor for Falls among Among inpatients Children at Al-Makassed Hospital

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Thesis Approval

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Dedication

I dedicate my dissertation work to the source of my strength that's always believedandsupport me all the time to the soul of my mother, May god have mercy on her, who dreamed that she would be present on this day, but she left us early.

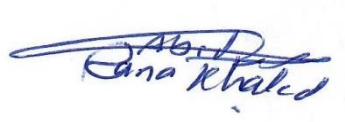
I also dedicate this dissertation to my family especially to my favorite sister Leila she's also support me all the time

Finally I dedicate this work and give special thanks to my supervisor Dr KefahZabenI thank you for your helpful advice motivation and support.

Declaration

I certify that this thesis which is submitted to the Deanship of Graduate Studies to get the degree of master in on filed Nursing Management, This is my own research and my own work and it doesn't submitted to any other universities or any institutions.

Rana Khaled Abed Raboh

Signed: 

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Abstract

Statement of the Problem

In the recent past, cases of fall related injuries among children have been on the rise. Environmental factors and age of the children has been pointed as some of the risk factors influencing fall related injuries in a non-hospital setting. Whether similar factors could influence pediatric falls in a hospital environment remains to be elucidated. Occurrence of inpatient falls has an impact on hospital budgets. Patients will require specialised treatment and readmission resulting in constraint on services. While the causes of fall in non-hospital environment are well documented, hospital related falls are poorly understood especially in Palestine. We hypothesized that the hospital environment factors such as presence of medication, diagnosis, health personnel as well as parental presence, time of day, age, and other patient characteristics were directly associated with inpatient pediatric fall. The purpose of the study was; a) to identify the risk level of falling down among the inpatient children in the pediatrics departments at Al Makassed Hospital, b) to identify the most common cause of falling down among the inpatient children in the pediatrics departments of the hospital and c) to investigate the effect of falling down and demographic data among the inpatient children in the pediatric departments of the hospital. To address these objectives, 116 pediatric falls that had been documented during hospitalization at Al Makassed Hospital were selected for retrospective chart review.

A retrospective and descriptive study design study was done to review the prevalence of inpatient pediatric bed falling in the pediatrics department at Al Makassed Hospital. The Humpty Dumpty Falls Scale (HDFS) was used to determine the child's risk for falling.

This tool was often used for assessment by nursing staff when patients are hospitalized, as the test scores are updated daily depending on the patient's condition.

Sources of Data

A retrospective and descriptive study design descriptive retrospective study was used to review the prevalence and level of statistical levels differences between variables. The independent variables were age, gender, hospital environment; time of day, patient characteristics, related injuries and risk factors, while the dependent variable was inpatient fall injury. To address these objectives, 116 pediatric falls that had been documented during hospitalization at Al Makassed Hospital were selected for retrospective chart review and used the Humpty Dumpty Falls Scale (HDFS) to determine the child's risk for falling. This tool was often used for assessment by nursing staff when patients are hospitalized, as the test scores are updated daily depending on the patient's condition.

Collected data were analyzed in SPSS to obtain basic characteristics of inpatient children that fell. A Z-score was performed todiscover the potential risk factors for inpatient fall., while a chi-Square (X2) test was used to identify the relationship between thesocio-demographic variables and the location of fall and to identify the level of risk factor of falling down at an alpha of 0.05 variables in which $p<.05$ was considered significant.

Conclusions Reached

Finding indicates that A total of 116 falls were reported in the Al Makassed hospital, out of which61.2% (n=71) child patients were male while 38.8% (n=45) were female child patients and also finding that that most children were at high risk of falling (n=76, 65.52%) while a marginal number were at low risk (n=39, 33.62%) and only one child was not under any risk.

Also findings indicate that male inpatients were more likely to fall and falls location also influenced occurrence of fall. The absence of family members and clinicians and medical services significantly increased chances of falling. It was noted that child's age older than 5 years were more likely to fall than one year old. An increase in age correlated positively with the likelihood of inpatient fall. These findings indicate that risk factors such as gender, age, presence of family member and clinician and location of fall influence inpatient fall. Importantly, the risk factors presented could be used as measures of reducing pediatric falls among children; and that there is need to educate family members about ways of ensuring children do not fall in the hospital.

الملخص

العنوان: تقييم عوامل خطر السقوط بين الأطفال المقيمين في مستشفى المقاصد.

اعداد: رنا خالد عبد ربه

الاشراف: د. كفاح الزبن

مشكلة الدراسة

في الماضي القريب ، تزايدت حالات الإصابات الناجمة عن السقوط بين الأطفال بشكل ملحوظ حيث تمت الإشارة إلى العوامل البيئية وعمر الأطفال على أنها بعض عوامل الخطر التي تؤثر على الإصابات المرتبطة بالسقوط في بيئة خارج المستشفى. لا يزال يتعين توضيح ما إذا كانت العوامل المماثلة يمكن أن تؤثر على حالات سقوط الأطفال في بيئة المستشفى. إن حدوث حالات سقوط للمرضى الداخليين له تأثير على ميزانيات المستشفى. سيحتاج المرضى إلى علاج متخصص وإعادة القبول مما يؤدي إلى تقييد الخدمات. في حين أن أسباب السقوط في البيئة خارج المستشفى موثقة جيدًا، إلا أن حالات السقوط المتعلقة بالمستشفيات غير مفهومة جيدًا خاصة في فلسطين. افترضنا أن عوامل البيئة بالمستشفى مثل وجود الأدوية والتشخيص والموظفين الصحيين بالإضافة إلى حضور الوالدين والوقت من اليوم والعمر وخصائص المريض الأخرى كانت مرتبطة ارتباطًا مباشرًا بسقوط الأطفال في المستشفى.

أهداف الدراسة

أ) تحديد مستوى مخاطر السقوط بين الأطفال المنومين في أقسام طب الأطفال في مستشفى المقاصد

ب) تحديد السبب الأكثر شيوعًا للسقوط بين الأطفال المنومين في أقسام طب الأطفال بالمستشفى .

ج) التحقيق تأثير السقوط والبيانات الديموغرافية بين الأطفال المرضى في أقسام طب الأطفال بالمستشفى.

لتحقيق هذه الأهداف ، تم اختيار 116 حالة سقوط للأطفال تم توثيقها أثناء الاستشفاء في مستشفى المقاصد لمراجعة الرسم البياني بأثر رجعي.

أجريت دراسة استكشافية وصفية لمراجعة انتشار سقوط سرير الأطفال في قسم طب الأطفال في مستشفى المقاصد. حيث تم استخدام مقياس يسمى مقياس ال هامبتي دمبتي فولز (HDFS) لتحديد مخاطر سقوط الطفل و غالبًا ما تستخدم هذه الأدوات للتقييم من قبل طاقم التمريض عند دخول المرضى إلى المستشفى ، حيث يتم تحديث درجات الاختبار يوميًا حسب حالة المريض.

مصادر البيانات

تم استخدام دراسة استكشافية وصفية لمراجعة انتشار ومستوى الفروق الإحصائية بين المتغيرات. المتغيرات المستقلة هي العمر,الجنس, وبيئة المستشفى,الوقت من اليوم ، وخصائص المريض ، والإصابات ذات الصلة وعوامل الخطر ،

بينما كان المتغير التابع هو إصابة السقوط للمرضى الداخليين. و لمعالجة هذه الأهداف ، تم اختيار 116 حالة سقوط للأطفال تم توثيقها أثناء الاستشفاء في مستشفى المقاصد لمراجعة الرسم البياني بأثر رجعي واستخدمت مقياس هامبتي دمبتي فولز (HDFS) لتحديد مخاطر سقوط الطفل. غالبًا ما تستخدم هذه الأدوات للتقييم من قبل طاقم التمريض عند دخول المرضى إلى المستشفى ، حيث يتم تحديث درجات الاختبار يوميًا حسب حالة المريض.

تم تحليل البيانات التي تم جمعها في برنامج التحليل الأحصائي (SPSS) للحصول على الخصائص الأساسية للأطفال المرضى الذين سقطوا. تم إجراء درجة Z لتحديد من أجل تحيد أسباب السقوط للأطفال المقيمين داخل المستشفى ، في حين تم استخدام اختبار كاي سكوير (X2) لتحديد العلاقه بين المتغيرات الاجتماعية و الديموغرافية و موقع السقوط وأيضا" من أجل تحديد مستوى معدل الخطر للسقوط عند مستوى ألفا من 0.05 المتغيرات التي اعتبرت 05.> p معنوية.

نتائج الدراسة

تشير النتائج إلى أنه تم الإبلاغ عن ما مجموعه 116 حالة سقوط في مستشفى المقاصد ، منها 61.2٪ (ن = 71) مريض أطفال ذكور بينما 38.8٪ (ن = 45) أطفال مريضات ، كما وجد أن معظم الأطفال كانوا من الإناث. معرضون لخطر السقوط (ن = 76 ، 65.52٪) بينما كان عدد هامشي معرض لخطر منخفض (ن = 39 ، 33.62٪) وطفل واحد فقط لم يكن تحت أي خطر.وتشير النتائج أيضًا إلى أن المرضى الداخليين الذكور كانوا أكثر عرضة للسقوط والسقوط كما أثر الموقع على حدوث السقوط .

أدى غياب أفراد الأسرة والأطباء والخدمات الطبية إلى زيادة فرص السقوط بشكل كبير. لوحظ أن عمر الطفل الأكبر من 5 سنوات كان أكثر عرضة للسقوط من عام واحد. ترتبط الزيادة في العمر بشكل إيجابي باحتمال سقوط المرضى الداخليين. تشير هذه النتائج إلى أن عوامل الخطر مثل الجنس والعمر ووجود أفراد الأسرة والطبيب وموقع تأثير السقوط على المرضى الداخليين تقع. الأهم من ذلك ، يمكن استخدام عوامل الخطر المقدمة كإجراءات للحد من حالات سقوط الأطفال بين الأطفال ؛ وأن هناك حاجة لتثقيف أفراد الأسرة حول طرق ضمان عدم وقوع الأطفال في المستشفى.

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List of Abbreviation

Abbreviation	Explanation
MFS	Morse Fall Scale
HDFS	Humpty Dumpty Falls Scale
CPFAS	Cummings Pediatric Fall Assessment Scale
NSQO	Nursing Sensitive Quality Outcomes
SPSS	Statistical Package for Social Sciences
GRAF PIF	General Risk Assessment for Pediatric Inpatient Falls

CHAPTER ONE:
Introduction

1. 1 Background

A falling down is one of the most common causes of children deaths in the world, due to their fall to the ground while in care, as it comes second in terms of being one of the most important accidents leading to death, and accidents can occur at anytime and anywhere within the hospital (Schaffer et al., 2012). Inpatient falls have an impact on hospital budgets, as the serious injuries resulting from it, such as head injuries or fractures of the femur, require the patient to stay in hospital longer than three weeks to perform surgeries and provide other aspects of health care (Jamerson et al., 2014).

The reasons for inpatient falling down in hospitals are numerous, including the internal ones, which are related to the patient's health and include cases of dizziness, weakness, eye vision impairment, and low blood pressure.There are also external reasons, which are related to the environment surrounding inpatients during their stay in the hospital, such as the presence of spilled fluids or wires on the floor that impede their movement and lead to their fall, or placing the patient's bed at a high level, or insufficient lighting in their room, in addition to not installing handles on the walls of the corridors and toilets, which in turn helps inpatients to remain stable while walking (Weil, 2015).

To prevent inpatient falling down in hospitals, the responsibility is shared between inpatients and hospitals, as inpatients must follow hospital instructions regarding avoiding their fall while in the hospital. On the other hand, hospitals has a major role to do so, as it must implement projects to improve quality to prevent inpatients falls by starting a field

survey to see the number of falls, and then studying the reasons that led to those cases using quality tools (Thomas et al., 2016).In terms of Palestine, there have not been any similar studies which have been conducted. However, similar studies have been conducted in other countries. For instance, the study conducted in 2018 investigated the prevalence and risk factors of the all injuries in hospitalized children in Saudi Arabia (AlSowailmi, et al., 2018). Similar studies were conducted for Korean (Jihee Han, Oh, Park, & Lee, 2020), American (Dykes & Adelman, 2018), and Iranian hospitals (Najafpour, Godarzi, Arab, & Yaseri, 2019). However, studied the structure and the prevalence of falling down in three old adults nursing homes of Palestine (Anabtawi & Qaddumi, 2014). Therefore, this study will aid in covering the research gap highlighted above.

1.2 Statements of problem

Children are faced with many life challenges, they are often readmitted to hospitals and due to lack of knowledge and awareness so, they are at high risk for fall down. Despite improved clinical care, increased public awarenessand extensive use of health innovations, the risk level of fall down remains one of the leading causes of morbidity in worldwide and as well as in Palestine. Previous literature demonstrates the causes of fall down, but there is a lack of knowledge about the levelsrisksof fall down and children, and the most common cause may lead to recurrence of fall downin children in Palestine.

These children require more attention to protect them from another life threatening; such as risksfall down or any other related subsequent adverse effects. Further assessmentabout risk level of fall downin children in Palestine is needed, potential an

understanding of the risks level of fall down in children may help to guide healthcare provider in their assessmentof children falling down and how to reduce and prevent the events of children falling down in the future.

1.3 Purpose of Study

The aim of the study is to assess the level of Risk of Falling down and the most common cause of falling down among the inpatient children in the pediatrics departments at Al Makassed Hospitalin Jerusalem.

1.4 Specific objectives of the study:

1. To identify the risk level of falling down among the inpatient childrenin the pediatrics departments at Al Makassed Hospital.
2. To identify the most common cause of falling downamong the inpatient children in the pediatrics departments at Al Makassed Hospital.
3. To investigatethe effect offalling down and demographic data among the inpatient children in the pediatric departments at Al Makassed Hospital.

1.5 Research Questions

1. What is the risk level of falling down among the inpatient children in the pediatrics departments at Al Makassed Hospital?
2. What are the most common cause of falling down among the inpatient children in the pediatrics departments at Al Makassed Hospital?
3. Is there a relationship between the location of falling downand demographic data among the inpatient children in the pediatrics department at Al MakassedHospital?

1.6 Hypotheses:

It was hypothesized that factors such as age, patient environment, characteristics, parental presence, time of the day, gender, other related injuries and risk factors associated with age were the main determinants of inpatient pediatric bed fallings among children aged below 5 years. To understand how various determinants affect pediatric falling, the following specific hypotheses, which were based on the research question, guided the study design.

H1: Sex of a child and lack of parental presence caused an increased risk to pediatric bed falling at the Al Makassed Hospital

H1: Sex and lack of parental presence did not increase the risk level to pediatric bed falling at the Al Makassed Hospital

H2: The patient characteristics and hospital environment are the most common cause of falling down among the inpatient children in the pediatrics departments at Al Makassed Hospital

H2: The patient characteristics and hospital environment are not the most common cause of falling down among the inpatient children in the pediatrics departments at Al Makassed Hospital

H3: There is a significant relationship between socio-demographic variables between the study participants regarding the Predictors for Inpatient Risk to fall.

H3: There is no significant relationship between socio-demographic variables between the study participants regarding the Predictors for Inpatient Risk to fall.

1.7 Significance of the Study

As shown in the problem statement above, the fall injuries in the children during their stay in the hospitals is one of major issues of safety for the patients. These inpatients pediatric falls can lead to several negative impacts for the patient and for the hospital itself. As compared to adults, there has been very little or nearly nonexistent studies which had been conducted on children fall injuries. More specifically, no previous studies have been conducted in the geographic context of Palestine. Therefore, this study will not only show the prevalent features and characteristics of the inpatient children who were reported to have witnessed falling down, and also to show the causes of falling down injuries which providing the healthcare officials with ways to provide better healthcare service to the children inpatients. It is important to know why these falling down injuries are caused and which

children are more sensitive to fall injuries. Knowing this information can aid the healthcare provider to prevent fall injuries in inpatient children in Palestinian hospitals. Furthermore, the resulting or the outcomes analysis and findings of this study will also aid other countries healthcare provider as well as the findings can be generalized and to know the main causes of falling down in children. However, further study should be conducted for different geographic contexts

1.8Definitions studyvariables (operational and theoretical)

Pediatric inpatient: pediatrics is defined as one of the branches of medicine that is concerned with the health of children from birth to adolescence (younger than 18 years old). Pediatrics is not limited to treating diseases that affect children, such as chronic and acute diseases, but rather it provides advice that helps prevent diseases and maintain their health and safety (Schaffer et al., 2012).

Falling: it is a sudden and unexpected event, in which the patient stumbles and falls on the floor or off the bed or other places. The fall may cause fractures or wounds that need a period of time in order to be treated (Thomas et al., 2016).

Falling down; "an unplanned descent to the floor with or without assistance" (American Nurses Association, 2006).**And also defined** as increased susceptibility **to falling** that may cause physical harm. (North American Nursing Diagnosis Association).

Al Makassed Hospital: it is a large academic edifice, and an advanced hospital. Founded in 1930, it has 250 beds, serviced by about 125 specialist doctors, 322 nurses, and 353 administrative employees, as it is distinguished by providing medical services in various technical specialties; from internal medicine, pediatrics, surgery, obstetrics and gynecology, anesthesia and resuscitation, tissue lab, and outpatient clinics.

Fall Risk Assessment Scale. An instrument that quickly identifies patients at risk for falls; thus, allowing for the implementation of preventive and protective measures, as well as, to monitor the patient throughout their hospitalization. (Morse, 2006).

1.9 Assumptions:

This research is based on three main assumptions:

1. This study is limited to children aged one to five, as this category is the most falling out of bed compared to other stages of childhood.
2. This study deals with falling from the bed without referring to other types of falls.
3. Gesell's Theory of Motor Development and Piaget's Theory of Cognitive Development are used to explain the characteristics of motor development in children.

1.10 Summary

Statistics in a number of countries in the world indicate a number of cases in its hospitals with the difference in numbers and percentages from one place to another due to the difference in the level of patient safety applications in each health facility.From this standpoint, this research came to assess factors, barriers and outcomes that are related to inpatient pediatric bed falling as well as to implement evidence based falling prevention measures in the pediatric patients in Al Makassed Hospital.

CHAPTER TWO

Literature Review and Theoretical Frameworks:

2.1 Introduction

The children are vulnerable for falling down more a lot when they gain the ability to fluctuate, especially after the fourth month, and thus have the opportunity to fall from the regular bed, so inpatients fall is one of the most reported incidents in hospitals (Wolfe et al., 2018). As fall may lead to head injuries or bone fractures, some of which are serious and fatal(Trefan et al., 2016). Therefore, pediatric patient safety is a set of measures and procedures that health institutions take to protect patients from any negative or dangerous consequences when they receive a certain type of health service. In other words, patient safety means a new health discipline that takes care of writing reports and following up on medical errors, sothere are many recognized scales used to identify patients at risk of hospitalization (Gurgel et al., 2017).

2.2 Causes ofPediatric Inpatient Falls

There is no doubt that injuries are the most dangerous factors for children's lives, as there are 2000 deaths per day among children under the age of 14 years, since 80% of them are registered in low and middle income countries (Sleet, 2018). Today, pediatric inpatient falls have become the main cause of injuries and deaths among children, as the centres expect these cases to rise due to several factors related to patients or hospital alike (Najafpour et al., 2019; Kim et al., 2019). For example in the United States, according to the CDC, it indicates

that the graph of the annual number of falls is still on the rise, because deaths due to falls were 40 deaths per 100,000 people under the age of 5 in 2005 and are 60 deaths per 100,000 people in the same age group in 2018. In addition, according to the UN Inter-agency Group for Child Mortality Estimation study in 2017, there were more than 5.5 million falls among children under the age of five years in America, as they caused more than 3 million injuries, including fractures, wounds, bleeding, head injuries and more, which cost more than $ 7 billion in those injury treatment services.

Generally, the most common cause of hospitalization of children, aged 0-17 years, is the result of falling out of bed (Kiser et al., 2012).The incidence of pediatricinpatients falls at the global level ranges from 30 to 50% (Morris &O'Riordan, 2017). The high rate of inpatient falls requires a preliminary assessment to identify the possibility of falling or not, pointing to the presence of a high risk for some pediatric inpatientsof exposure to falls, so it is necessary to write reports for all cases of falls to identify their causes and the rapid movement to address them (Thomas et al., 2016; Weil, 2015).Moreover, Jamerson et al. (2014) explained that the incidence of pediatric inpatients falls was 84% per 1,000 patient days, as these injuries cause the patients to stay for two days in excess of the normal time for their discharge, causing material losses to the hospital.

2.3 Characteristics of Pediatrics Hospital Falls

Children, especially at the age of five, are characterized by the severity of movement, so control can be difficult, because they move from one activity to another and have unlimited energy, since there is difficulty in listening or following advice and instructions, and may have behavioural problems which cause increased fall rates while in hospital to

receive health care (Thomas et al., 2016).This researchillustrated multiple hospital characteristics including environment in which patients receive treatmentand at the same time, they are exposed to many injuries such as falls, the age of the children and its impact on their risk of falling, the time of day most likely to fall, parental presence and its role in protecting children and reducing the risk of falling, and patient characteristics.

2.4 Environment

Hospitals and medical buildings in general are distinguished projects of a special nature that are characterized by continuous change and development in the requirements of architectural design, due to the development in the diagnosis and detection of diseases, methods of treatment, and scientific and technical equipment(Benning & Webb, 2019). Although determining the size of the hospital, the required area of the land, and the number of beds are subject to several factors and influences that vary from place to place and from one country to another according to the scope or region that the hospital serves, the physical capabilities, standard of living, and the medical system used, there are standard rates that can guide when planning and designing hospitals of all types (Casimir, 2019).

Many factors surrounding the inpatient environment may contribute to an increased risk of falls. Insufficient lighting may cause increased anxiety and tension in children, causing them to fall, as hospitals in particular need a strong study in lighting, due to the difference in services provided in a number of parts (Clay et al., 2018; Jamerson et al., 2014).The height of the bed also plays a big role in avoiding the fall, as it must be at its lowest height and ensure that the brakes are placed so that they do not move (AlSowailmiet al., 2018; Alemdaroğlu et al., 2017).Side effects of medications such as dizziness, weakness,

drowsiness, or having to constantly rush to the bathroom may, in one way or another, cause inpatients to fall from their bed (Wolfe et al., 2018; Burrows et al., 2015).

Spilled Liquids on the floors of rooms and hallways, bathrooms without drying them, as well as failure to tightly install rugs on the floor and bend their edges may cause patients to fall. To reduce the risk of falls, hospitals should be careful to choose beds that fit the size and age of young children as it has built-in side bars that provide a safer sleeping environment. Also, beds are well-fitted on all sides, and do not vibrate while sleeping, playing or moving (Quigley, 2016).

2.5 Age

Age is among a group of factors that have been recognized medically as factors for the increased risk of falling and stumbling in children (Burrows et al., 2015).Childhood, especially less than five years, is characterized by its rapid development, which coincides with the occurrence of many behaviours, which makes it vulnerable to many fall accidents (Unni et al., 2012; Wang et al., 2013). In addition, Chaudhary et al. (2018) indicated that the age of children and sex has a significant impact on their risk of falling, as they are in this critical period may need complicated surgical procedures. The process of falling is not related to certain reasons, some of which are related to the type of medications used, which causes imbalance, some due to problems with vision and hearing, others caused by complications of surgeries or others(Schaffer et al., 2012). In this regard, Rizal & van Doorslaer (2019) explained that the chances of injuries resulting from the fall of children, aged 0-5 years, are seven times higher than children aged 6-18 years, since this percentage increases in children for those who suffer from chronic diseases, have weakness in the

muscles and joints and problems in the eyesight capabilities, and face physical difficulties in wearing appropriate shoes and taking certain medications.

2.6 Time of Day

Falling off the bed during sleep is the most common time for young children to fall, as they fluctuate very often and do not feel the edges of the bed and how to avoid them, then falling occurs during sleep in the evening or even during the nap (Jones et al., 2017).Parasomnia is one of the problems of sleep in widespread children, and almost everyone passes it. It is physical, movement and psychological phenomena that occur during sleep in an inappropriate timing, such as talking and screaming during sleep, walking and sudden movements of the legs, muscle contractions, night terrors and nightmares, which may cause children to fall asleep (Montplaisir et al., 2017; Irfan et al., 2017).

2.7 Parental Presence

Children under the age of five enjoy innocence and pure instinct, since they do not realize the dangers of things around them, so parents should do everything in their power to protect them and keep them away from what might harm them. Some children have a problem with persistence during sleep, especially when they are in the hospital, and in this case they are more likely to fall if the bed does not have some aspects that provide protection for the child from falling (Kim et al., 2016). If the child falls off the bed and the fall is not very strong, parents can do some simple aids; for example, put some snow on the place where the child fell. However, parents should be more alert to the affected place in their

child, since falling on the head necessitates calling the doctor immediately to ensure that there is no significant risk to the head, especially inside.Parents should not immediately move their child because this affects his cognitive condition, but leave him a little bit until he moves on his own.In addition to the ones mentioned above, parents should follow the instructions hanging above the bed, which include avoiding the movement of barefoot children, not leaving the children alone and informing the nurse before departure, and leaving the bunk beds high all the time (Chromá, 2016).

2.8 Patient Characteristics

There are several characteristics of patients that contribute to the confusion of communication between them and the health care provider.Because anxiety is usually high when in hospital, it is not surprising that anxious children are more likely to fall out of bed. The worstcharacteristic in children is their large movement, especially during sleep.It is worth noting that this problem usually affects approximately fifty-nine percent of children at the age of nine months, and this percentage begins to decrease significantly to reach thirty-three percent when the child reaches one and a half years of age, and drops sharply to reach four percent after child reaches five years of age.Parents should improve dealing with that problem and ensure that the children are given sufficient and necessary time to sleep, as this contributes to increasing the growth of the children's body and mind in addition to keeping their movements during the day , which reduces the risk of them falling out of the bed or anywhere else (Irfan et al., 2017).

2.9 Related Injuries

Frequent inpatients pediatricfalls from the top of the bed causes serious problems, wounds and possibly problems of the nervous system or spine of the children.Head injuries are the most serious at all, as pediatricinpatients require 24-hour monitoring in order to ensure their complete safety and that they have not suffered concussion or internal bleeding (Pérez-Suárez et al., 2012).Some studies conducted on American children showed that 80% or more of head injuries result in the death of children over one year old.Sometimes, the incidence of pediatric inpatients on their head leaves a small ball-like bruising or swelling, as this swelling doesn't have to be dangerous, and it will not last long (Trefan et al., 2016). Concussion is very common in young children, but it is difficult to recognize in infants and young children because they cannot describe how they feel. The falling onleg or hand often does not cause concern, except in the event of a fracture or a crack, where there will be swelling and inpatients pediatric screamed of extreme pain and their inability to move it (Loftus et al., 2018).

Bone injuries in children are also common, and often occur as a result of falls. A fracture is a cut or laceration in the great connection that causes the bone to split into two or more parts, since it is difficult to detect from ordinary x-rays and requires high technical expertise (Hajiaghamemar et al., 2019). In children, the ligaments and tendons are relatively stronger than the bones, so injuries that may lead to dislocations or rupture of joints in adults can cause fractures in children (Baker et al., 2015). Moreover, children who suffer from night terrors appear to have recurrent episodes of intense fear, frightening screaming, constant crying, kicking and turbulent movements in the body, and it will be difficult to wake them if they occur (Owens & Mohan, 2016).

2.10Risk Factors and Pediatric Fall Risk Assessment Scales

Every day, a child is exposed to falls, and with the increase in the number of such falls, the medical care bill automatically increases, which requires doctors to realize that they must contribute to preventing these cases from occurring, especially among groups of children who are at higher risk of falling cases (Sleet, 2018). Therefore, hospitals have a big role to implement quality improvement projects to prevent patients from falling, especially with internationally approved scales that have proven successful in reducing this problem. During the implementation of these scales, the performance measurement indicator should be used to find out the extent of employee commitment and the impact of these measures on reducing falls, as there are a number of mathematical operations used in a large number of hospitals that facilitate comparison in inpatient fall rate (Benning & Webb, 2019).

There is no consensus on an appropriate assessment method for all types of medical organizations, but choosing and using the most appropriate measures reduces the risk of falls (Kobayashi et al., 2017). These measures are often used for evaluation by nursing personnel when patients are hospitalized. The test scores are updated daily depending on the patient's condition, as calculations of the risk of falling are very simple and do not require serious examination of the patient (Gurgel et al., 2017).The Morse Fall Scale (MFS) is a measure that was invented by Samuel Morse, as this scale is used to identify patients at risk in addition to procedures concerned with providing a safe environment for the patient.MFS comprises of six questions, since each question has a specific answer and point.This scale is divided into three states that are low risk of falling, moderate risk of falling, and high risk of falling, as a patient with a score lower than 25 points will have low risk of falling, while the patient

with a score ranging between 25 and 45 will have moderate risk of falling, and finally the patient with a score higher than 45points will have high risk of falling (Nassar et al., 2014).

In addition, nursing uses Cummings Pediatric Fall Assessment Scale (CPFAS) to assess the risk of falling for children, which contains six items, including a history of falls within 3 months, physical alteration and impairment, functional status, equipment, cognitive/psychological impairments, and medications (DiGerolamo& Davis, 2017). The total scores are collected for each item in order to determine the degree of severity and the necessary measures that are taken to prevent the fall as follows: a zero score mean no risk, from one to seven score means low risk and from eight to sixteen score means high risk

- 0 (no risk)
- 1 to 7 (low risk)
- 8 to 16 (high risk)

2.10.1 Morse Fall Scale (MFS)

The Morse Fall Scale (MFS) is a measure that was invented by Samuel Morse, as this scale is used to identify patients at risk in addition to procedures concerned with providing a safe environment for the patient. MFS comprises of six questions or variable those are history of falling, secondary diagnosis, ambulatory aids, intravenous therapy, gait, and mental status, as each variable has a specific score, since each question has a specific answer and point.This scale is divided into three states that are low risk of falling, moderate risk of falling, and high risk of falling, as a patient with a score lower than 25 points will have low risk of falling,

while the patient with a score ranging between 25 and 45 will have moderate risk of falling, and finally the patient with a score higher than 45points will have high risk of falling (Nassar et al., 2014).

Level

Risk Level	**Morse Fall Scale Score**	**Action**
Low Risk	0 – 24	Implement **Low** Risk Fall Prevention Interventions
Medium Risk	25 – 44	Implement **Medium** Risk Fall Prevention Interventions
High Risk	45 and higher	Implement **High** Risk Fall Prevention Interventions

2.10.2 Cummings Pediatric Fall Assessment Scale

Nursing uses Cummings Pediatric Fall Assessment Scale to assess the risk of falling for children, which contains six items, including a history of falls within 3 months, physical alteration and impairment, functional status, equipment, cognitive/psychological impairments, and medications (DiGerolamo& Davis, 2017). The total scores are collected for each item in order to determine the degree of severity and the necessary measures that are taken to prevent the fall as follows:

- 0 (no risk)

- 1 to 7 (low risk)
- 8 to 16 (high risk)

The Cummings Pediatric Fall Assessment Scale is a six-item scale that can be used with children as young as three months. The scales six items screen for the existence of the following: (a) a history of falls within 3 months, (b) physical alteration and impairment, (c) functional status, (d) equipment, (e) cognitive/ psychological impairments, and (f) medications that alter equilibrium. A child is screened for each of the six items and receives a numeric score ranging from 0 to 16 depending on their health status. For each of the items, a score of 0 is assigned to a "no" response and a "yes" response is assigned a score ranging from 1-3. The six items on the scale are totaled. A total score of zero is "no risk", a total score between 1-7 is low risk and a total score equal to or greater than 8 is "high risk."

2.10.3 Humpty Dumpty Falls Scale (HDFS)

The Joint Commission requires pediatric hospitals to implement fall prevention programs and evaluate the efficacy of such programs. The **Humpty Dumpty** Falls **Scale** (HDFS) is one of several instruments **developed** to assess **fall** risk in pediatric patients.It's developing by the Graf (2005a) **GRAF PIF (**General Risk Assessment for Pediatric Inpatient Falls)developed by Elaine. The scores are collected for each component, since the patient who gets a score between 7 and 11; this means that the risk of falling is slight, while the patient who gets a score between 12 and 23, this means that the risk of falling is high.

Humpty Dumpty Scale is comprised of seven categories including (a) age, (b) gender, (c) diagnosis, (d) cognitive impairment, (e)environmental factors, and (f) response to surgery/sedation/anesthesia and medication usage (Hill-Rodriguez, 2008). By

• Assessing/screening for risk factors for falls in children.

• Using identifiers to implement falls prevention protocol.

• Implementing protocol according to patient needs.

• Reassessing patient and modifying as appropriate.

• Reporting incidence of falls.

• Measuring/monitoring rates.

• Enhancing falls prevention program.

Criteria to using **The Humpty Dumpty Falls Scale (HDFS):**

- ***No risk standard protocol (score 0-6).***

- ***Low Risk Standard Protocol (score 7-11)***

- Orientation to room.
- Bed in low position, brakes on.
- Side rails x 2 or 4 up, assess large gaps, such that a patient could get extremity or other body part entrapped, use additional safety procedures.
- Use of non-skid footwear for ambulating patients, use of appropriate size clothing to prevent risk of tripping.
- Assess eliminations need, assist as needed.
- Call light is within reach; educate patient/family on its functionality.
- Environment clear of unused equipment, furniture's in place, clear of hazards.
- Assess for adequate lighting, leave nightlight on.

- Patient and family education available to parents and patient.
- Document fall prevention teaching and include in plan of care.

➢ *High Risk Standard Protocol (score 12 and above)*

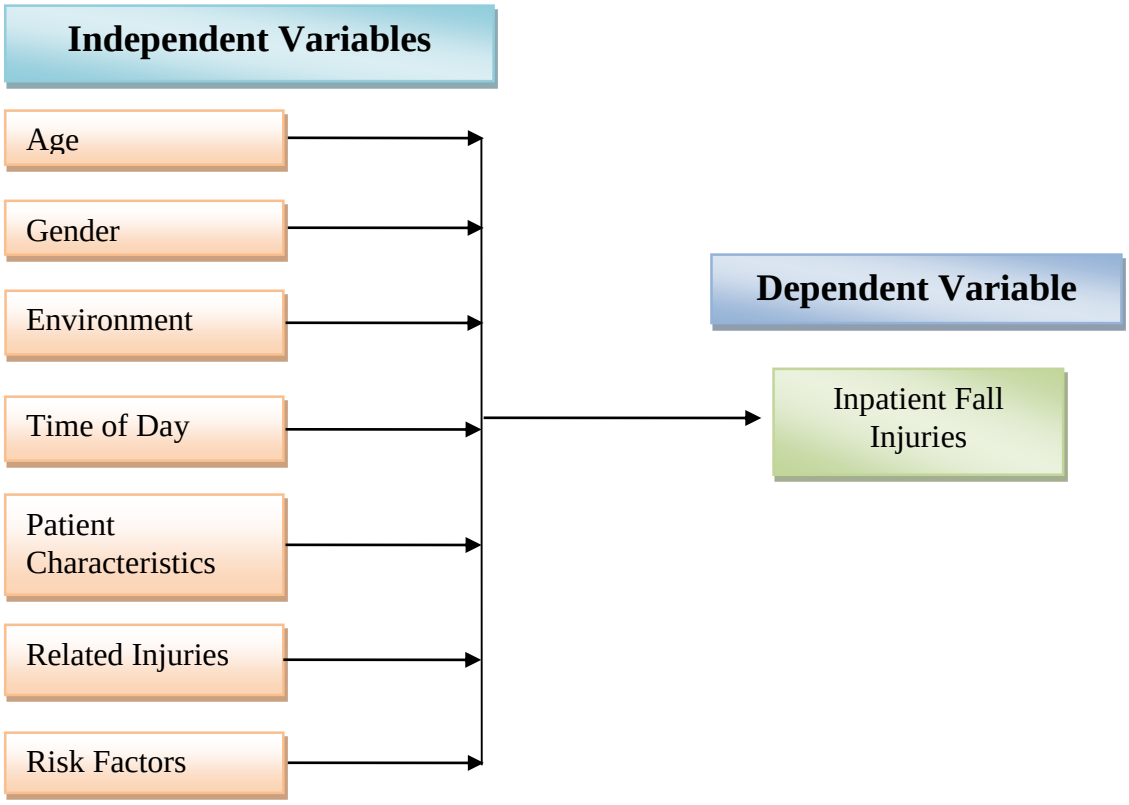
- Identify patient with a “humpty dumpty sticker” on the patient, in the bed and in patient chart.
- Educate patient/parents of falls protocol precautions
- Check patient minimum every 8 hour
- Accompany patient with ambulation
- Developmentally place patient in appropriate bed.
- Consider moving patient closer to nurses’ station.
- Assess need for 1:1 supervision.
- Evaluate medication administration times
- Remove all unused equipment out of the room
- Protective barriers to close off spaces, gaps in the bed
- Keep door open at all times unless specified isolation precaution are in use
- Keep bed in the lowest, unless patient is directly attended
- Document in nursing narrative teaching and plan of car.

2.11 Summary

The probability of pediatrics inpatient fall rates and risk increases day by day with reference to several statistics that prove this. This is due to a group of internal factors, which are related to the characteristics of pediatric inpatients themselves, or external factors related to the hospital and its staff and equipment. In this chapter, a group of these factors are reviewed, which are environment, age, the time of day,parental presence, and patient

characteristics.Hospitals seek to apply high standards that are specialized in the field of safe and reliable patient care, ensuring that the risks of slipping and falling during hypnosis are reduced. Therefore, awareness must be raised among all hospital personnel, in addition to laying down the correct practical foundations for using scales and writing reports in cases of patient falls. The main objective of these scales is to assess the potential risk of each patient falling, including the potential risk associated with patient treatment. This assessment is also repeated at regular intervals in order for proper measures to be taken to reduce or prevent any specific risks to the patient's fall.

Theoretical Frameworks:



2.12 THEORETICAL FRAMEWORK

2.12.1 Introduction

There has become a great interest in recent years in how human behaviour begins and how it grows, as a lot of research has been done and many results have gathered on the nature of the child, which has made psychological development self-standing and an important branch of general psychology (Butchon&Liabsuetrakul, 2017). Therefore, the theories of psychology concerned with studying the behaviour of the organism and the mental processes behind it, through which understanding, controlling, predicting and planning behaviour can be understood (De Ribaupierre&Lecerf, 2017). It represents the activities or daily responses emitted by children through their interaction with others as well as the surrounding environment, whether this activity (external or apparent) can be directly seen and observed such as motor and verbal activity (Lourenço, 2016).

One theory that brings together structure, process and outcome is the Donabedian triad theory, which describes outcome as desirable or undesirable change that occurs attributable to health care delivery (Donabedian, 1996; 2003). The concepts described in this theoretical framework are the inherent linear influence of process and structure on the outcome variable.

From a nursing perspective, nursing sensitive quality outcomes (NSQO) are tenets that define this kind of relationship so that the structure and process will have a direct impact on the nursing care. Organization resources such as hospital environment, risk factors, and time of the day may have significant outcome on the patients' quality of care. While hospital acquired falls is categorized as adverse events, it is important that organizational structure such as environment and other patients' factors are studied to underscore their contribution in patients fall. While most study focus on adult fall, similar studies on pediatric falls are limited. It is expected that studying inpatients falls among the

children aged 5 years and below will help us understand factors that could be managed to reduce these cases.

2.12.2 Gesell's Theory of Motor Development

Gesell's theory of motor development revolves around the effective role that the child's biological systems play in determining growth models, as the changes that notice during growth are affected by the genetic preparations of the organism and the automatic growth of the nervous and hormonal systems of the body that mediate the motor and psychological capabilities (Guddemi et al., 2014). In addition, Giselle believes that the most important factor in growth is the maturity, so that growth is affected by maturity before the environment, as maturity occurs and develops through a constant sequence in all people. However, this growth is normal when it provides the minimum level of health and environmental care for the individual (Vatavu et al., 2015).

Gesell's theory of motor developmentwas concerned with the first five years of the human new-born's life, as it pointed out that those years involve rapid, varied and sudden changes (Adolph &Franchak, 2017). During this period, the theory showed that children are in an unquenchable thirst for movement and activity, as their movements are characterized by exerting a great deal of extra effort and involving a large number of muscles. In addition, this theory suggests that children need to develop a relationship with caregivers in order for them to have emotional and social development, since this primary relationship has fundamental effects that will last a lifetime (Guddemi et al., 2014).

Also, this theory showed that children, aged 1-5 years, possess the sensory experience and cognitive processes necessary to gain knowledge of their environment (Vatavu et al., 2015). Hence, it appears that the visual, auditory, tactile, olfactory and gustatory senses work in varying degrees in early childhood, as they become more severe with age and experience (Adolph &Franchak, 2017). In some of these perceptual processes, the assumption that excitation energy provides the children with the primary material that they organize to learn about the environment (Guddemi et al., 2014). Moreover, motor development consists of patterns of behaviour directed towards the sources of excitation of the five senses, which is represented in the movement skills (Sigmundsson et al., 2017). These include random movements, which continue until the age of five, as children can perform any irregular and undifferentiated movement (Butchon&Liabsuetrakul, 2017). Furthermore, Gesell believes that people are born with the tendency to organize intellectual processes into knowledge structures, which play an important role in children's understanding of the outside world, as these structures determine what can be absorbed at a specific time (Kopp, 2018).

2.12.3 Piaget’s Theory of Cognitive Development

Piaget's theory is one of cognitive developmental theories because it deals with how an individual's knowledge grows across multiple stages of development. As this theory measures abilities and what relates to intelligence that changes with age, since it is concerned with explaining growth in the methodological and psychological dimensions (Goodway et al., 2019). Piaget's theory of cognitive development sees growth as a progressive process

connected to changes that reveal the child's potential. As it focused on the importance of providing the children with different educational experiences that help them gain different concepts during their childhood.Piaget believes that intelligence grows in children gradually, as they need preliminary facts that are a prerequisite for perception (De Ribaupierre&Lecerf, 2017).

Piaget's theory classifies cognitive stages for child development according to changes in the cognitive processes and abilities that children possess and acquire, as this development involves processes that are based on procedures and evolve into changes in mental processes. Therefore, mental or cognitive development is a series of imbalances and restoration of balance while dealing with the environment, using representations and alignments in an integrated way (Kopp, 2018). The transition from a mental developmental stage to the next one occurs gradually, and thus individuals realize the environment through the mental structures that they have. This theory paid attention to the compatibility between the sense and movement, so that children can get things with the environment that is compatible with their internal sensations, which work on forming the sensory aspect that is a manifestation of the child's mental development (Anderson, 2018).

According to this theory, there are many factors affecting cognitive development, such as maturity and equilibrium (Bormanaki&Khoshhal, 2017). Maturity increases the ability to interact, which leads to gaining experiences from others and benefiting from their behaviour, as children works to exchange information with adults and tries to align their behaviour with the activities of others who occupy a place in their life. Therefore, this interaction between maturity and motor development and the resulting information acquired

by the children decisively affects the stages of cognitive development that they are is going through (De Ribaupierre&Lecerf, 2017).

On the other hand, equilibrium occurs when biological agents interact with the physical environment, since the more children physically develop, the better their ability to move and interact with the surrounding environment (Bormanaki&Khoshhal, 2017). Real changes grow with experimentation, examination, and observation that contribute to the development of mental and motor processes that represent the children's tendency to achieve equilibrium.As equilibrium is responsible for the growth of thinking and the development of the cognitive outcome, therefore it is necessary for the child to enjoy the activity and vitality in order to be able to achieve the balance process (Goodway et al., 2019).

2.12.4 Summary

The importance of studying developmental psychology aims to know the motor and psychological characteristics of each stage of development in children, in theory and in practice. This allows those in the medical field, especially nurses, to know the human nature and the relationship of children to the environment that surrounds them that lead to the determination of growth criteria in all its manifestations during the first five years of a child's life such as motor, mental, emotional and social development, which helps both nurses and parents to predict the behaviour of the child at this age, and thus reduce the risk of falls injuries, as well as increases their ability to direct children to control different factors and influences.

CHAPTER THREE

3.0 METHODOLOGY

Clinical and medical research aims to try to fill knowledge gaps by asking questions that have not been answered before, thus reaching total or partial answers that improve the health status of patients and change the way healthcare professionals work. Research design is the overall strategy chosen by the researcher to integrate the various components of the study in a coherent and logical manner, which ensures an effective treatment of the study problem, as it constitutes a blueprint for data collection, measurement and analysis. The process of designing or planning research is to ensure that the evidence gathered enables the researcher to address the research problem as clearly as possible.

The research strategy was informed by the realization that limited psychometric testing has been reported onthe Humpty Dumpty Falls Scale (HDFS). A retrospective and descriptive study design was adopted to underscore a number of characteristics associated with pediatric children that experience falls within the hospital settings. Besides, it was envisioned that data acquired in this study were determine the scoring for each levels of the Humpty Dumpty Falls Scale (HDFS)in predicting hospitalized children's fall risk on admission to the hospital and at the time of the fall. The parameters were utilized in predicting hospitalized children's fall risk on admission to the hospital and at the time of discharge.

3.1 Study Design

An retrospective and descriptive study design was conducted around a research problem when there are few previous studies, as the focus in this type of research is on

acquiring visions with the research issue in order to investigate it, especially when the problem is in its initial stage (Rahi, 2017).The objectives of exploratory research are dedicated to producing potential familiarity with basic details, settings and risks related to child fall (Miller et al., 2015). This type of study is used to obtain information related to the current state of inpatient pediatrics and to describe “what exists” in relation to variables or conditions in a specific situation, as descriptive exploratory study will examine factors surrounding pediatric falls.

In this study, A retrospective descriptive exploratory study was done to review the level of risk factoresof inpatient pediatric bed falling in the pediatrics department at Al Makassed Hospital. In addition, a descriptive exploratory study was employed to measure the variables within the study, through conducting the Humpty Dumpty Falls Scale (HDFS)in order to provide sufficient background for this research, which is The Humpty Dumpty Falls Scale (HDFS), since these tool are considered as a relevant and easy way of collecting data. This tool isconsidered the most appropriate approach for this type of information. It is also well regarded for its ability to cover a large number of variables regarding pediatric inpatients (younger than 5 years of age). In addition, these scales may help children reduce their risk of falling and boost their confidence.

3.2 Site and Setting

The setting for this research will depend on a distinguished medical edifice in pediatrics, which is Al Makassed Hospital, as it is an advanced hospital, since it has 250 beds, serviced by about 125 specialist doctors and 322 nurses as it is distinguished by providing medical services in various technical specialties; from internal medicine, pediatrics, surgery, obstetrics and gynecology, anesthesia and resuscitation, tissue lab, and outpatient clinics. Moreover, the pediatric department runs an educational program for resident physicians who specialize in paediatrics, as the pediatric department is linked and systematic in working with the Faculty of Medicine at Al-Quds University. The availability of diagnostic tests and treatment methods is considered one of the best in the world under the supervision of a qualified and specialized nursing staff. The pediatrics department in Al Makassed Hospital which consist of the pediatric ward, pediatric open heart, pediatric Intensive Care Unit and the Neonatal Intensive Care Unit were included in the study.

3.3 Sample size and sampling procedure:

The target population of this study was all inpatient pediatric in Al Makassed Islamic Hospital. A total of 116children were collected in order to capture information on inpatient pediatric falls that occurred in the period between January 2015 and December 2016 in the pediatric (0-5 years of age) department in Al Makassed Islamic Hospital. All patients with fall events reported over a 2 years (2015-2016). Eligibility requirements for this study were included all fall events experienced by all inpatients at the pediatrics wards.

3.4 Inclusion Criteria:

It is expected that data were collected from electronic records of children aged 5 years and below. This is to capture falls reported in this cohort of patients. The main inclusion criteria are that the fall reported must have happened in the pediatric department and associated with the hospital environment. It is important to note that data in records may not capture the exact cause of fall, and the main assumption of the study is that records captured are all accurate.

3.5Exclusion Criteria:

A pediatric fall that happens beyond the hospital ward was excluded from the study. Children above the age of 5 years were also being excluded from the study. It is possible that other falls may have happened in the hospital vicinity and if that did not take place within the pediatric ward they was not be included in the study.

3.6 Measurements or instruments:

These studies generally rely on the adoption of a set of preventive measures, the most important of which is to classify inpatient pediatrics according to the risk of falling by a certain tools, where the nurse evaluates the condition of each patient and identifies the possibilities of exposure to the fall through information related to his/her health and specific assessment data known in the health sector. In the case that there is a possibility of a fall, the nurse will take certain measures to reduce the possibility of the patient falling (Benning & Webb, 2019). Therefore, the first and most important procedure is to assess the patient's condition and the possibility of falling. The Humpty Dumpty Falls Scale (HDFS) will be

used to determine the child's risk for falling. These tools are often used for assessment by nursing staff when patients are hospitalized, as the test scores are updated daily depending on the patient's condition. These measures have proven effective in reducing the incidence of falling sick patients to 0.4-0.6 for every 1,000 sleep days in comparison to the global ratios of this index, which amount to 3,6 per 1,000 hypnosis days. Nursing team at Al Makassed Islamic Hospital was conducted a retrospective study in order to identify the relationship between the socio-demographic variables and the location of fall and to identify the level of risk factor of falling down.

The Humpty Dumpty Falls Scale (HDFS) was used to assess the risk of falling for children. HDFS consists of seven components the child's age, gender, diagnosis, cognitive abilities, environmental safety, response to surgery/sedation, and the use of medications, The scores are collected for each component, since the patient who gets a score between 0 and 6 ,this means that no risk of falling while the patient who gets score between 7 and 11, this means that the risk of falling is slight and the patient who gets a score between 12 and 23, this means that the risk of falling is high. Also, the full scan takes no more than 10 minutes by nursing team.

The researcher was considering when using this tool, they should be comprehensive and multifaceted. It must support policies to create a safer environment and reduce risk factors for falls, as technical work should be encouraged to eliminate potential fall hazards, and raise awareness of medical staff and parents about the risk factors for falls, which aim to apply high standards that specialize in safe and reliable patient care.

3.7 Pilot Study:

To get a representative data, a baseline piloting study was conducted to inform the study sampling and data analysis. Briefly, the piloting study was be undertaken to establish if the target hospital has enough data sets on inpatient falls among children below the age of 5 years and whether data stored in the pediatric departments could adequately be used to address the study objectives. This approach is necessary to ensure appropriate planning on data collection and whether some activities were berequired to facilitate sampling in the target place.

3.8Data Collection Procedure:

At first written approval to conduct the study was obtained from the Al Quds University Department of Nursing according to the Al Makassed hospital and the quality department. Then, data were collected from individual occurrence reports submitted to the risk and quality department and through an electronic retrospective medical record review. After that, The Humpty Dumpty Falls Scale (HDFS) scores were collected which occurred within 10 days of the fall risk assessment.

3.9Plan for Analysis

In this study, Statistical Package for Social Sciences (SPSS), version 23, wasused to analyses data that were extracted from the Humpty Dumpty Falls Scale (HDFS). Moreover, SPSS has the ability to read and analyze data from most file types to extract results in

statistical forms as sensitivity and analysis in SPSS was adopted to assess the scales scores through the following tests:

The value-mean by dividing the children who were exposed to the risk of falling into all children who entered the hospital, this ratio will give us the true size of the problem and find appropriate measures to avoid it.

Chi-Square (X2) Test for Independence was used to identify the relationship between socio-demographic variables and the location of fall. At an alpha of 0.05 variables in which $p<.05$ will be considered to be significant.

3.10 Ethical considerations:

Written approval to conduct the study was obtained from the Al Makassed hospital through the Nursing Department - Al-Quds University. Permission was obtaned to access data collected from individual occurrence reports submitted to the risk and quality department and through an electronic retrospective medical record review.

To ensure that data collection adhered with the merits of sound scientific judgment, ethical approval from the hospital management was sought. The ethical forms contained details on the process of data collection and the objectives that were driving the study. Besides, it contained ways of making collected data confidential and could only be shared with agreed signature of the study participants.

3.11 Summary:

The study was adoptedby A retrospective and descriptive studydesign to assess thelevel ofinpatient pediatric bed falling in the pediatrics department at Al Makassed Hospital. Briefly, the study was based on the main falls risk assessment tools namely The Humpty Dumpty Falls Scale (HDFS). These were selected based on their relevance and ease of data collection. The study was undertaken in the pediatric department of the Al Makassed Hospital and it is expected that data from 116 children were included in the study covering the period from January 2015 to December 2016. It is expected that falls happening within the pediatric ward among children below 5 years were the main inclusion criterion. Data collections were involved acquisition of demographics such as age, gender, environment and other risk factors such as patient characteristics and time of the day and how these influence pediatric injuries. These data were stored in confidential Microsoft excel file and loaded in SPSS for data analysis to establish means and standard deviation, and significant levels at 95% confidence intervals ($p<.05$).

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Characteristics:

The data compiled from the Al Makassed hospital on the characteristics of the children reported to have fallen is presented in the tables. These tables show the demographics and other specific characteristics which are important to analyse and their importance in terms of presence and occurrence of falls.The analysis of this data will reveal how the medical staff can work on reducing the frequency and probability of falls in children aged below 5 years.

4.2 Results

The characteristics of those who fell are displayed in Table 1. The subjects were predominantly male (n=71, 61.2%) and females comprised 38.8%. The majority of the participants were ages 4 to 5 years and old (54.3%); 2-3 years (21.6%), and less than 2 years (24.1%).

The information collected on medical unit showed that, 43 (37.1%) were of general pediatric, 23 participants (19.8%) were of trauma surgery, 25 participants (21.6%) were of ENT surgery, 15 participants (12.9%) were of neurosurgery and 10 participants (8.6%) were of pediatric surgery.

Table 1: Demographics and Characteristics of Inpatient Who Fell

Characteristic	Numbers	Percentages (%)
Gender		
Male	71	61.2
Female	45	38.8
Age-group		
Less than 2 yrs.	28	24.1
Between 2-3 yrs.	25	21.6
Between 4-5 yrs.	63	54.3
Medical Unit		
General Pediatrics	43	37.1
Trauma Surgery	23	19.8
ENT Surgery	25	20.7
Neurosurgery	15	12.9
Pediatric Surgery	10	8.6

Children Fall Risk and Type of Risk Using Humpty Dumpty Scale

Based on the convenient sample of humpty dumpty scale,a one child who were get no risk, while 39 child's who gets low risk and 76 child's who gets a high riskfor falls.

The type of risk rate of those who fell was presented in Table 2. High risk rate represented the highest percentages (n=76, 66.9%), followed by low risk rate (n=39, 32.2%).

Table 2: Percentage of Children Fall Risk and Type of Risk Using Humpty Dumpty Scale

Type of risk	Frequency (%)
No risk	1 (0.8%)
Low risk	39 (32.2%)
High risk	76 (66.9%)

Circumstances Surrounding Falls

Table 3 presents circumstances surrounding fall including medication, presence of family member during fall, clinician presence during fall, time of fall rounded to nearest hour, and time of admission that the fall occurred in day.

Regarding the location of fall, from bed fall represented the highest percentage 31(25.6), followed by patient room represented 26 (22.5%), fall in bathroom 21(18.0), fall in hallway 17(15.7), and the least fall percentage was play room 9(8.3) and others 12 (9.9).

According to the presence of family members during fall, the highest percentages of fall occurred during father presence 44(36.4), followed by the presence of both parents 34(30.6), the presence of mother represented by 30(26.4), and the least percentages was the presence of other family members 8(6.6).

The percentages of fall during the presence of clinicians, the highest percentages of fall occurred in the absence of clinicians 57(47.1), followed by the presence of registered nurse 39(32.2), and the least percentages of fall occurred during the presence of other health professionals (students, volunteers, sitters)20(20).

Regarding time at fall, the largest percentage of patients fell during the night (n = 63, 54.2%), followed by patients fell during the day (n=30. 25.8%, and the least patient fall occurred during the evening (n=23, 20%). In relation to the time of admission that fall occurred in day, the highest percentages of fall occurred after 1-4 hours after admission 61(52.1%), followed by 5-9 hour of admission, less than 1 hour represented 11(9.1), and the least falls occurred after 15-19 hour and 20-24 hour of admission which was 4(4.1).

Table 3: Circumstances of first falls

Characteristic	Numbers	Percentages (%)
Location at Time of Fall		
Patient room	26	22.5
Bath room/toilet	21	18.0
Getting on/off bed	31	25.6
Corridor	17	15.7
Paly room	9	8.3
Others	12	9.9
Time at fall		
Day	30	25.8
Evening	23	20
Night	63	54.2
Medication		
Opioids		
Yes	27	23.1
No	94	77.7
Anti convulsants		
Yes	14	12.4
No	106	87.6
Laxatives		
Yes	16	13.7
No	103	85.1
Sedatives		
Yes	49	42.2
No	72	59.5
Anti-hypertensive		
Yes	10	8.6
No	109	90.1
Accompanying Person		
Father	44	36.4
mother	30	26.4
Both parents	34	30.6
Other family member	8	6.6
Clinician presence during fall		
No clinician	57	47.1
Registered nurse	39	32.2
Others (student, volunteer, sitter)	20	20.7
Time of admission that fall occurred in day		
Less than 1 hour	11	9.1
Between 1-4 hours	61	52.1
Between 5 -9 hours	30	24.8

Between 10-14 hour	6	5.8
Between 15-19 hour	4	4.1
Between 20-24 hour	4	4.1

Table 4presented the possibility of risk factors to influence inpatient fall in descending order. The results showed that time of fall rounded to nearest hour has the highest mean 4.10(1.6) to increase the chance of falling down, followed by medication with a mean 4.00(2.1). However, the study results indicated that gender was the least influential factor of falling down with a mean 1.43(0.5).

Table (4) Summary of risk factors associated with inpatient fall in descending order (n=116)

characteristics	**Mean**	**SD**
Time at fall	4.10	1.6
Medication	4.00	2.1
Location of fall	3.21	1.5
Time since admission that fall occurred in day	2.67	1.2
Age	2.49	0.7
Family member	2.22	0.9
Diagnosis	2.17	1.0
Clinician presence during fall	2.12	0.9
Gender	1.43	0.5

Table 5: presented the relationship between different socio-demographic variables that we considered them as arisk factors for falling down including (gender, age, diagnosis, medication, family member presence, presence of clinician, and time of fall rounded to nearest hour) and location of fall. Surprisingly, the findings revealed a strong significant relationship between all socio-demographic variables and location of falling down.

The results indicated that there is a significant relationship between gender of the child and the risk of falling down (P value <0.001), where male children were more likely to fall than female childe. Regarding the effect of diagnosis on potentiality of falling down, the results showed that a child with medical conditions are more likely to fall in patient room and bathroom, whereas a child with neurological problems are almost more likely to fall from bed. The results showed that the child under opioid effect is more likely to fall in his room, whereas a child under sedation effects is more likely to fall from bed. It is obvious that, the presence of father significantly increases the chance of falling down (P value <0.001). Our study results indicate that absence of clinician and when the child left alone significantly increase the chance of falling down.

Table (5) Relationship between location of fall and demographic variables

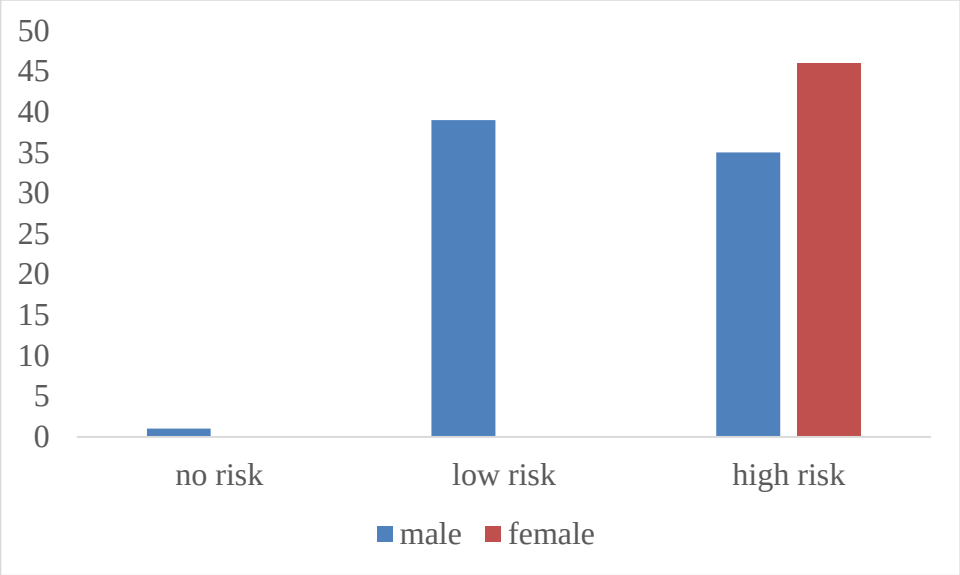
Variable		Pt. room	Bathroom	From bed	Hallway	Play room	others	P value
Gender	Male	51(27.2)	55(29.9)	78(42.4)	-	-	-	<0.001
	Female	-	-	15(10.9)	57(41.3)	30(21.7)	36(26.1)	
Age	<2 yr.	45(100.0)	-	-	-	-	-	<0.001
	2-3	6(8.2)	55(75.3)	12(16.4)		-	-	
	4-5	-	-	81(39.7)	57(27.9)	30(14.7)	36(17.6)	
Diagnose	Internal medicine	51(49.5)	52(50.5)	-	-	-	-	<0.001
	Neurology	-	3(3.0)	93(93.9)	3(3.0)	-	-	
	Trauma	-	-	-	54(64.3)	30(35.7)	-	
	Pediatric surgery	-	-	-	-	-	36(100.0)	
Medication	Opioids	51(96.2)	2(3.8)	--	-	-	-	<0.001
	Anti-convulsant	-	32(100.0)	-	-	-	-	
	Laxatives	-	21(38.9)	33(61.1)	-	-	-	
	Sedatives	-	-	60(90.9)	6(9.1)	-	-	
	Anti-hypertensive	-	-	-	33(100.0)	-	-	
	benzodiazipine	-	-	-	18(85.7)	3(14.3)	-	
	Diuretics					27(52.7)	24(47.1)	
	Opioids combined with sedatives	-	-	-	-	-	12(100.0)	
Family member	Father	51(56.0)	40(44.0)	-	-	-	-	<0.001
	Mother	-	15(15.6)	81(84.4)	-	-	-	
	Both parents	-	-	12(10.8)	57(51.4)	30(27.0)	12(10.8)	
	Others	-	-	-	-	-	24(100.0)	
	No clinician	51(51.0)	49(49.0)	-	-	-	-	<0.001

Clinician presence	Registered nurse	-	6(5.1)	93(79.5)	18(15.4)	-	-	
	Others	-	-	-	39(52.0)	30(40.0)	6(8.0)	
	Child life	-	-	-	-	-	30(100.0)	
Time of admission rounded to nearest hour	7-11 am	41(100.0)	-	-	-	-	-	<0.001
	11-3 MD	10(45.5)	12(54.5)	-	-	-	-	
	3-7 pm	-	31(100.0)	-	-	-	-	
	7-11 pm	-	12(30.8)	27(69.2)	-	-	-	
	11-3 MN	-	-	66(44.9)	57(38.8)	24(16.3)	-	
	3-7 am	-	-	-	-	6(14.3)	36(85.7)	

Relationship between Risk of falling down and Gender

Figure1showed that male children had the highest percentage of low risk of falling down (24.2%) and high risk (50.2%) as compared to female (low risk, 0.00% vs. 30.8% high risk).

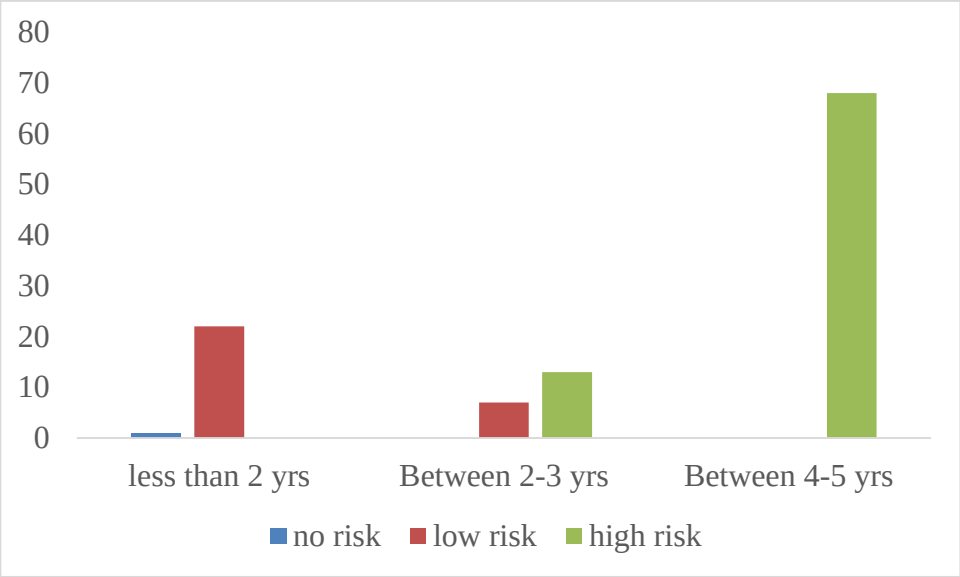
In relation to the gender of the child patients, this study has shown that gender is also an important factor in determining the possibility of falls in children in the hospitals. The literature Cooper &Nolt, 2007; Cummings, 2006; Graf, 2004; Lyons & Oates, 1993; McGreevey, 2005; Razmus et al., 2006) has showed evidence that males tend to be at greater risk with regards to the falling during hospitalizations.



Risk of falling down and Gender

Relationship between Risk of falling down and age-group

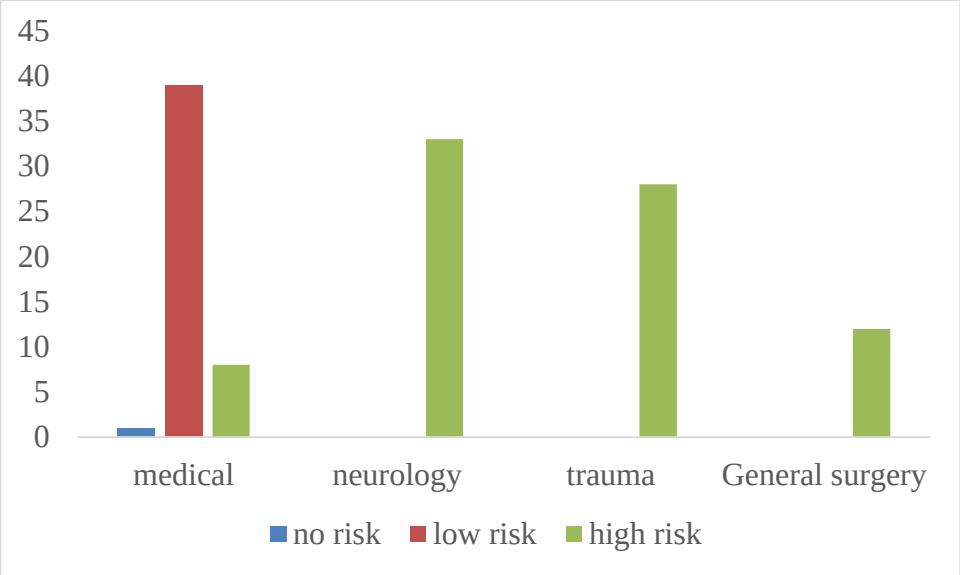
Figure 2show that children age-group between 4-5 years old had the highest percentage of high risk of falling down (n=65, 45.5%) as compared to those in the 2-3 years old (n=13, , 20.1) and less than 2 years (0.00%).



Risk of falling down and age-group

Relationship between level of risk of falling down and medical diagnosis

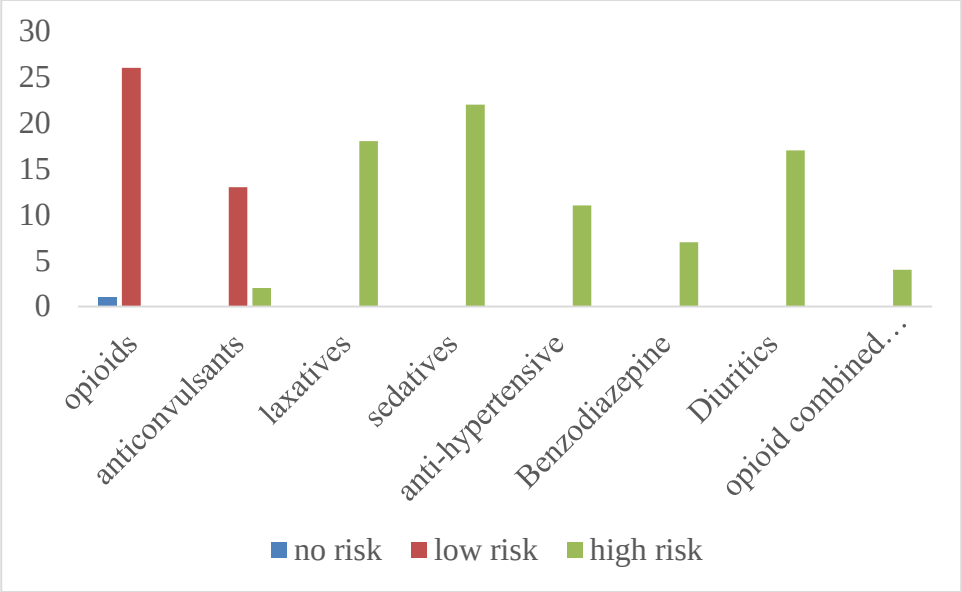
Figure 3showed that children with medical diagnosis had the highest percentage of low risk (n=39, 15.5%), but they had the least percentages of high risk of falling down (n=8, 32.1%) as compared to those with neurological diagnosis, trauma diagnosis, and general surgery, (n=33, 22.1%) vs. (n=28, 18.7%) and (n=12, 8.7%), respectively.



Risk of falling down and medical diagnosis

Relationship between level of risk of falling down and medication

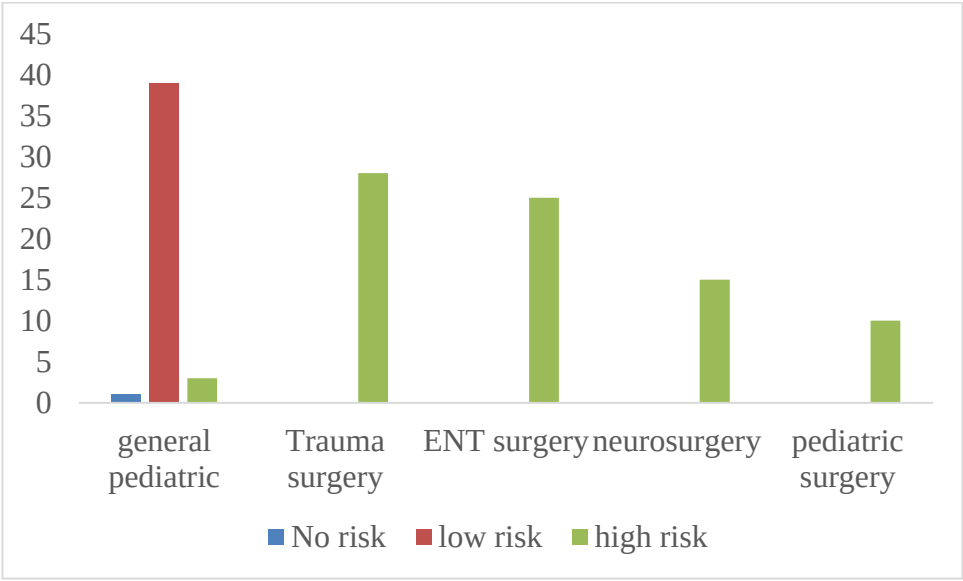
Figure 4show that children under opioid drug effect had the highest percentage of low risk of falling down (n=26, 8.7%) as compared to those under anti-convulsant drug effect (n=13, 4.8%). Whereas, children under sedative drug had the highest percentage of high risk of falling down (n=22, 14.7%) as compared to those under the effect of laxative drugs vs. diuretics drug, anti-hypertensive drug, opioid combined with sedatives, and opioid drug alone, (n=18, 12.0%), (n=17, 11.4%), (n=11, 7.4%), (n=4, 2.7%), respectively in descending order.



Risk of falling down and medication

Relationship between level of risk of falling down and medical unit

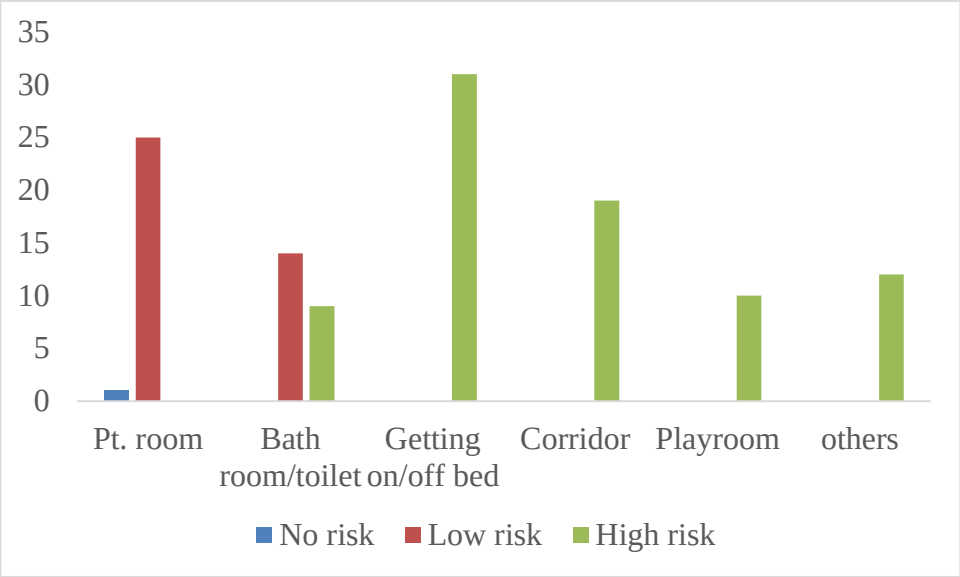
Figure 5show that children admitted to trauma surgery unit had the highest percentage of high risk of fall (n=28, 18.7%) as compared to those admitted to the ENT unit (n=25, 16.7%), neurosurgery (n=15, 10.0%) and Pediatric surgery (n=10, 6.7%)



Risk of falling down and medical unit

Relationship between level of risk of falling down and location of fall

Figure 6showed that the chance of children to fall in his room was the highest percentage in term of low risk (n=25, 8.4%) as compared to the chance of children to fall in the bath room/toilet (n=14, 7.4%). Whereas, in terms of high risk, the chance for the children to fall with the highest percentage while getting on/off his bed (n=31, 38.3%) as compared to the children chance to fall in other locations such as corridor (n=19, 23.5%), others (12, 14.8%), playroom (n=10, 12.3%), and bath room/toilet (n=9, 11.1%).

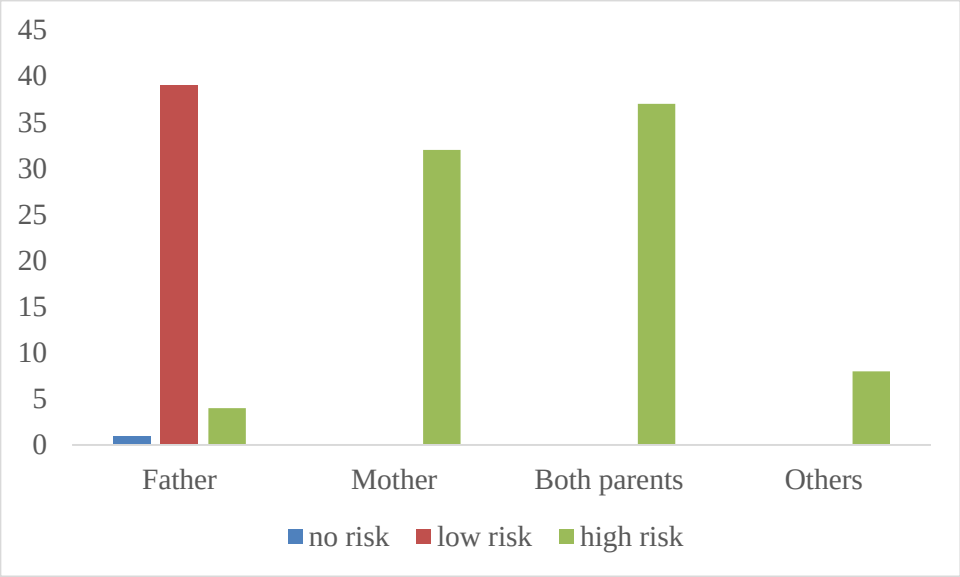


Risk of falling down and location of fall

Relationship between level of risk of falling down and Accompanying

Figure 7 showed that the children had the highest percentage of low risk to fall (n=39, 32.2%) vs. high risk to fall (n=4, 29.5%) in the presence of father. On the other hand, children had the high risk to fall in the presence of both parents followed by the presence of the

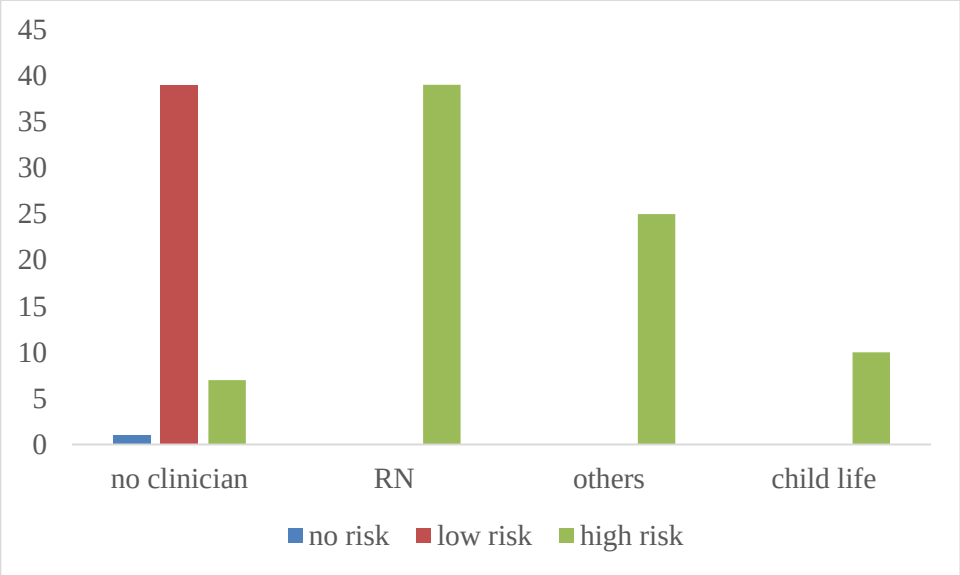
mother alone and finally in the presence of other family member, (n=37, 24.8%), (n=32, 21.4%), (n=8, 5.4%).



Risk of falling down and Accompanying

Relationship between level of risk of falling down and clinician presence at time of fall

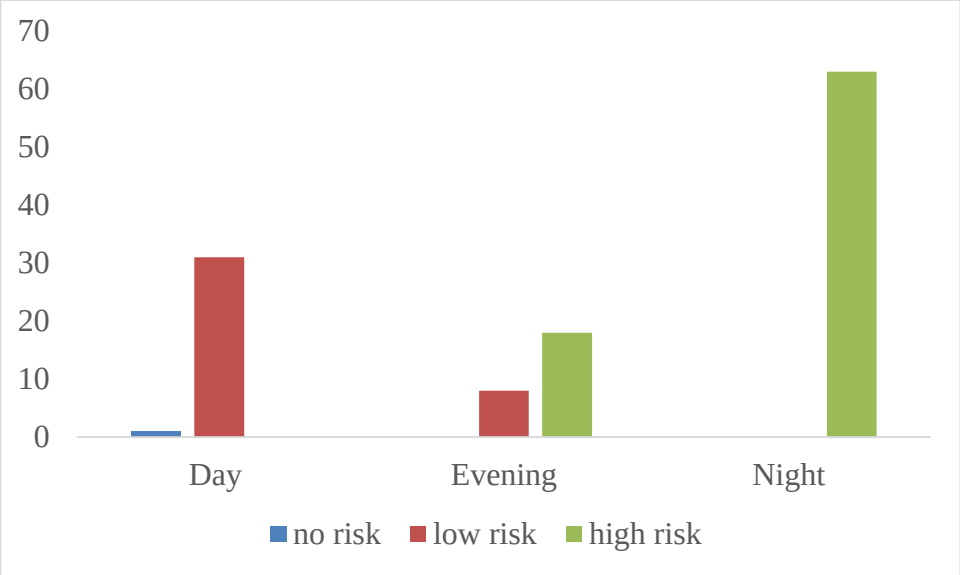
Figure 8showed that the children had the highest percentage of low risk to fall (n=39, 48.1%) vs. high risk to fall (n=7, 8.6%) in the absence of clinicians. On the other hand, children had the high risk to fall in the presence of the registered nurse (n= 39, 36.1%), in the presence of others such as students, volunteers and sitters (n=25, 16.7%), whereas the least chance for high risk to fall was in the presence of child life (n=10, 6.7%).



Risk of falling down and clinician presence at time of fall

Relationship between level of risk of falling down and time of a day

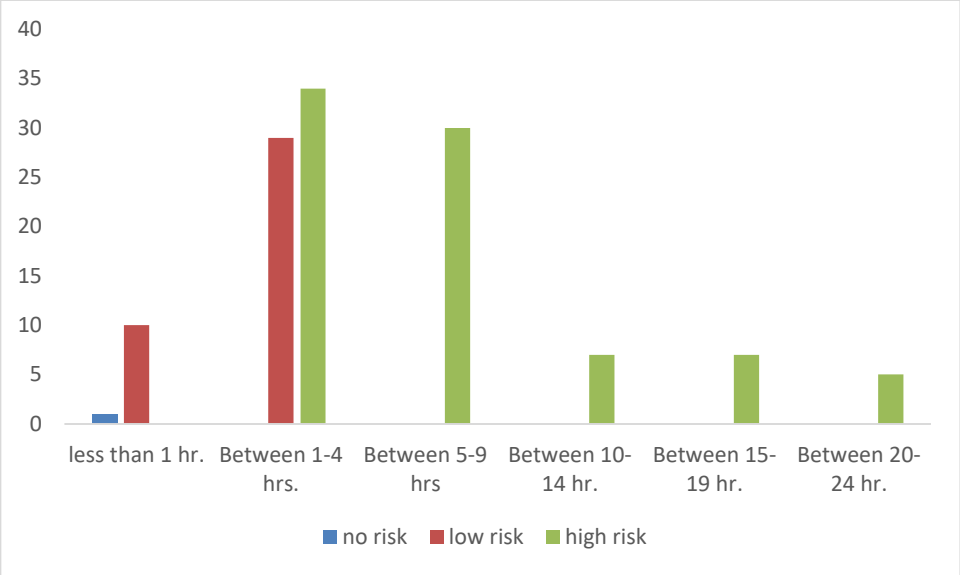
Figure 9showed that the children had the highest percentage of low risk to fall during the day shift (n=30, 25.6%) vs. evening shift (n=8, 6.6%). Whereas, children had the higher high risk to fall during night shift (n= 63, 54.2%) vs. those who had the chance for high risk to fall daring day shift (n=18, 8.6%).



Risk of falling down and time of a day

Relationship between level of risk of falling down and time of admission

Figure 10showed that the children had the highest percentage of low risk to fall almost during the time between 1-4 hours of admission (n=29, 24.0%) vs. the chance of low risk fall during the time of less than one hour of admission (n=10, 8.3%). Whereas, children had high risk to fall during the time between 1-4 hours of admission, followed by the chance to fall during the time of admission between 5-9 hours of admission and the time of admission between 10-14 hours, (n=34, 28.1%), (n=30, 24.1%), and (n=7, 5.8%).



Risk of falling down and time of admission

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Overview

This study has used the data collected on the Pediatric falls at the Al Makassed hospital to find the factors and characteristics of the fall and the fallen patients that can be detrimental in aiding the risk and probability of the falling cases in children in future.

The study used a descriptive exploratory research design to investigate the characteristics of the fall cases of inpatients of Al Makassed hospital. The study has used descriptive statistics and MS Excel to identify the patterns in data and interpret it to make recommendations for the reduction of the falls in hospitalized children.

This study finding provides valuable information concerning characteristics and circumstances of inpatients falls. In addition, predictors of fall, level of fall risk was also studied. The findings are discussed below.

5.2 Major Findings:

Falls occurring in hospital inpatient areas are a major source of injury to this population. This retrospective study examines data from one acute care hospitals in Palestine. Descriptive and inferential analyses of these data were performed to discover potential risk factors for inpatient fall. The findings of this study provide valuable information for inpatient falls. The major findings are listed as following:

The significant predictors for inpatient falls were found to be as follows: Internal Medicine diagnostic category; being admitted to an internal medical unit; beingaccompanied by one or more family members or friends while hospitalized; being admitted to an neurology unit; being subject to falls in hospital locations other than the nursing unit to which admitted; and having a trauma diagnosis. Significant predictors for high risk among patients experiencing falls were found to be as follows: patients admitted to internal medicine; patients getting on/off bed; absence of clinician, being recently admitted, and patients under the medication effect.

Significant predictors of inpatient high risk fall were as follows: gender (female had higher chance to fall); age where children of less than 2 years of age had higher chance for high risk fall; patients falling in hospital locations "getting on/off bed" than those other locations to which they were admitted; and those patients who were accompanied by one or more family members or friends during admission. This has also been confirmed in the study by Levene and Bonfield in 1991. Other than this, Razmus also reported that most of the falls occur in the children rooms as they were not in bed. The study results also supported by many previous studies in the literature, (Hill-Rodriquez et al. 2008; Razmus et al. 2006; Cummings, 2006; Graff, 2005) have all showed that younger children usually have higher frequency of incidents while they are hospitalized. This study is supporting the previous literature of (Cooper &Nolt 2007; Cumming 2006; McGreevey 2005) as it shows that the children aged less than 5 years usually have higher number of incidents of falls in the hospitals.

Being male or female children had been considered an important factor in determining the possibility of falls in children in the hospitals. The literature Cooper &Nolt, 2007;

Cummings, 2006; Graf, 2004; Lyons & Oates, 1993; McGreevey, 2005; Razmus et al., 2006) has showed evidence that males tend to be at greater risk with regards to the falling during hospitalizations.

If inpatients at risk of injury can be identified, this information will provide a reference for hospital and nursing management to set new policy and procedures aiming at the reduction of risks of inpatient falls and injuries.

Hypotheses testing of the Predictors for Inpatient Riskto fall

A chi square test was used to identify the relationship between socio-demographic variables and the location of falland testing the research hypotheses. It showed that significant positive predictors for chances of children fall are present in allmedical units, such as encountering falls at differentlocations, different shift, being under the drug effect and the presence of an accompanying person at the time of fall as determinants of severity level of risk to fall.

Table 4 shows the results of patients who had a fall in internal medicine units as having a significantly higher chance to fall than those in other medical units (such as neurology, trauma, and pediatric surgery). This may be due to the fact that internal medicine units are not a separate unit for medical specialty and therefore it might be the case that the care providers in these units may not be good at providing adequate care to patients. Another possible reason for the higher chance to fall in the internal medicine units may be due to the fact that although there may be fewer inpatient falls in this department, the staffs are not competent enough to interdict such situations.This is parallel with the study conducted by Cooper and Nolt in (2007).

The chance to fall was found to be higher if a fall occurred outside patient room than in patient room, which again is explainable by the simple fact that when patients are outside, they are less likely to have assistance than when inside and also the environmental factors prevalent outside the rooms are more likely to result in increasing the chance to fall.

The study findings suggested that in thepresence of an accompanying person at the time of a fall, the chance to fall was found to be higher than when the patient was unaccompanied at the time of the fall. This finding although is converse to what most people might think, it brings to light an important aspect of delivery of care to patients.In many instances, the accompanying person of the patient differs by each day depending on the availability of family members who take turns to be at the patient bed side. Sometimes the accompanying person can be a child, arelatively younger or an older person who may not even know how to assist patients during or soon after a fall, there by resulting in more serious injuries than when the patient might have been alone. Also, nurses tend to rely on the fact that the accompanying person is capable of taking care of the patient and is therefore a form of negligence on their part as well. Our study results are inconsistent with a previous study done by Razmus 2006and Levene&Bonfield's 1991 studies showed that the paediatric falls cannot be determined from the parental presence. Parents were found to have reported falling of their children in their presence. The reason could be that children tend to be more relaxed with their parents and hence take more risks of jumping and running and climbing. Other than this, it is also noted that the nurses and staff usually do not communicate and educate families well enough to show the risk of children falling in the hospitals. This shows the significance of the parental and staff communication and parental education in terms of reducing the risks of falling in children. I addition, Cooper and Nolt have shown in their

study published in 2007 the importance of the parental and clinician communication in reducing the risk of falling in child patients.

In this study an effort has been made to compare falling patients with no risk to fall, with those with low risk and high risk to fall. Surprisingly there are 66.9% (n=76) patients hadthe chance of high risk to fall; this figure is a warning that work is needed to address the problem, both directly and through further investigation.

Present analysis suggests that patients' were being hospitalized in the selected hospital; the chance to fall during night shift has positive predictive value. These findings could be explained, those hospitalized in the selected hospital where the patients receive less nursing care when comparing with other hospitals and medical centers, furthermore, since the selected hospital may have the lowest ratio of nurses to patients that may contributing to the higher risk for falling and fall injury. Those patients in the wheelchair have a higher risk for serious fall injury may come from the inappropriate use of wheelchair by patients or care providers. Providing education on the proper operation of the equipment is paramount. Those suffered from the neurology disease had the higher risk of serious fall. Because there are many health conditions common to the neurology patients, including Parkinson's diseases, and the use of mood stabilizers that should be assessed as predictors for chance to falls.

The hypotheses presented at the start of the paper are as follows; the acceptance or rejection of the hypothesis is shown as such:

H1: Sex of a child and lack of parental presence caused an increased risk to pediatric bed falling at the Al Makassed Hospital

H1: Sex and lack of parental presence did not increase the risk level to pediatric bed falling at the Al Makassed Hospital

The hypothesis H1 is Accepted.It was observed that most falls (61.2%) were likely to occur among male children as opposed to their female counterparts (38.8%). Children were at high prevalence of falling when fathers were present (36.4%) than when both parents were present (30.6%) or when mothers alone were present (26.4). These indicate that parental presence was a key determinant for the occurrence of pediatric bed falling at the Al Makassed Hospital.

H2: The patient characteristics and hospital environment are the most common cause of falling down among the inpatient children in the pediatrics departments at Al Makassed Hospital

H2: The patient characteristics and hospital environment are not the most common cause of falling down among the inpatient children in the pediatrics departments at Al Makassed Hospital

The hypothesis H2 is AcceptedPatient characteristics such as gender and age influenced fallingPresence of clinicians, medical services directly influence falling.

As the inpatients reported with bed falling were truly mostly boys, however, aged age-group between 4-5 years old had the highest percentage of high risk of falling downand had parental presence.

H3: There is asignificant relationship between socio-demographic variables between the study participants regarding the Predictors for Inpatient Risk to fall.

H3:There is no significant relationship between socio-demographic variables between the study participants regarding the Predictors for Inpatient Risk to fall.

Accordingly, since there are significant relationships in all socio-economic variables among the participants in relation to the Predictors for Inpatient Risk to fall, we reject the null hypothesis in all included predictors

Table summarizing the three hypotheses, factors studied and their outcome

Hypothesis	Risk Factors	Accepted/rejected	Comments
***H1*:**	Sex of child influenced falling Lack of parental presence	***Accepted***	Most falls were boys (61.2%) Reduced falls when both parents were present
***H2*:**	Patient characteristics influenced falling Hospital environment influenced falling	***Accepted***	Patient characteristics such as gender and age influenced fallingPresence of clinicians, medical services were directly influence falling
***H3*:**	No significant relationship between socio–demographic variables	***Rejected***	Since there are significant relationships in all socio-economic variables among the participants in relation to the Predictors for Inpatient Risk to fall, we reject the null hypothesis in all included predictors.

5.3 Research Limitations:

As with all quantitative studies, limitations are evident in this study as well. The data used is limited as only 116 entries were investigated for only two years of records of Al Makassed hospital. Only one pediatric unit records were used and other hospitals may contain variation in terms of characteristics of the fall, and the inpatients. The size of the sample has been small which also limits the exposure of the study. Other than this, the entire study is based on the recordings made by the hospital staff as per their already established system of reporting whose efficiency and quality is not known.

This study uses only one hospital' fall incident reports so that causal relationships are not possible to ascertain, leaving only the opportunity to explore factors associated with fall-related predictors. Additional limitations include:

1. The fall incident report may be influenced the hospital's safety culture so that falls might be over or underreported. It is possible that major fall related injuries are reported to the hospital patient safety officer or risk management and not those leading to"minor" injuries. All the fall incident reports collected here represent only one year and two months and cannot be used to present trends in fall prevalence.

2. Only eight acute care hospitals in Taiwan will participate in the study and, therefore the findings of this study cannot be generalized to all other hospitals in Palestine.

5.4 Implications for Patient Fall Management

From this study, the data show a higher fall rate. It is possible that falls not resulting in injury are less likely to be reported than falls that do result in injury. Thus, caution should be used in comparing fall rates and injury rates across services or hospitals, whether in Palestine or internationally. One suggestion is that, when service or hospital managers are seeking to develop a fall prevention program or to reduce injuries resultingfrom falls, they might be well-advised to pay more attention to trend data associated with the quantitative number of falls and injury related falls alone.

The predictors for risk factors to fall described in this study should be beneficial for developing better methods for assessing falls, fall risk and injury and designing prevention programs beneficial to all at-risk patients.

Although a majority of falls still are reported as resulting in no injury, predictors of injury *per se* should be considered as well as predictors of patient fall risk when developing fall management and prevention programs. This study has already been encouraged to continue to use this fall incident report form. One participating hospital has already changed this report form hand to electronic recording. The fall incident report has been added as a mandatory screen by each primary nurse who is now required to enter falls reports form on a database managed by a centralized quality management department. Finally, the detail data of information fall will become more accurate and uniformed than the hand writing. Thus, effective intervention for reducing fall risk can be developed.

5.5 Recommendations for Policy Makers

Since inpatient falls are among the most common sources of incident reporting in hospitals, care providers need greater understanding the detail of falls, their causes and their predictors. Prevention strategies, especially for high-risk patients will become more important as the population ages and chronic illness presents greater opportunities for falls and associated injuries. The risk factors for injury falls will likely provide a basis for a more appropriate and accurate intervention for reducing injury related -falls since fall can't be inevitable. The more we get fall incident reports the more we understand the complexity of inpatient falls. Thus, despite the heterogeneity of health settings, the managers of the health organization or nursing managers need to create a patient safety culture which will encourage health care team staff are willing to report fall incident and to develop a standardization policy for reporting patient fall incident.

5.6 Implications for Research

There is need of additional research in this field by using qualitative as well as quantitative data and research methods. There is also a need to conduct studies which uses more data from hospitals. Other than this, it is also needed that more emphasis is put on analyzing the educational and communication practices of the hospitals for educating of the parents and accompanying family members. The behavior of the children with their parents and the hospital staff should be analyzed as well. And also need to conduct a study about the types of injuries that occurred as a result of falling down.

There is considerable fall rate variation and associated injuries based on differences in hospital classification and services. It is recommended that further research be conducted,

based both by clinical services and hospital classification to identify falls and fall injuries predictors. For example, adding control groups of matched patient's includingthose who did not fall would be likely to identify more independent risk factors.

Additionally, investigation of associated costs and resources utilization documenting the economic effects of acute care inpatient falls would seem highly appropriate together with implications for best practices clinical management.

5.7 Implications for Practice:

The hospitals are required to collect and report the data on patient safety indicators and the fall rates is one of indicators needed to be collected. For improving the quality system and patient safety and prevention mechanisms it is important to reduce this number. This study helps in this regard. The hospitals can work on improving pediatric falls reporting system and mechanism to improve the process. Other than this, the nurses and hospital staff can be trained to educate and better communicate with the family of the patients to reduce the risks of falling.

Appendix:

***Pediatric Fall Risk Assessment and Reassessment (The Humpty Dumpty Scale*)**

Category					score
Sex	Male 2	Female 1			
Age	>3years 4	3-7 years 3	7-13 years 2	<13 years 1	
Diagnosis	Neurological diagnosis 4	Alternation in oxygenation (respiratory Diagnosis, Dehydration, Anemia, Anorexia Syncope /Dizziness 3	Psych/ Behavioral Disorders 2	Other Diagnosis 1	
Cognitive Impairments		Not aware of limitations 3	Forget limitation 2	Oriented to Own ability 1	
Environmental Factors	History of falls or infant –toddler placed in bed 4	Patient uses assistive devices infant –toddler or in crib or furniture/ lighting (tripled room 3	Patient placed in bed 2	Outpatient area 1	
Response to Surgery /Anesthesia			Within 48hrs 2	More than 48 hours /none 1	
Medication Usage		Multiple uses of Sedatives (excluding ICU patents sedated and paralyzed) Hypnotics ,Barbiturates Phenothiazine, Antidepressants Laxative /Diuretics 3	One of the meds listed before 2	Other medications / None 1	
				Total Sign	

Morse Fall Scale

Item	***Scale***	***Scoring***
1. History of falling; immediate or within 3 months	No 0 Yes 25	_____
2. Secondary diagnosis	No 0 Yes 15	_____
3. Ambulatory aid Bed rest/nurse assist Crutches/cane/walker Furniture	0 15 30	_____
4. IV/Heparin Lock	No 0 Yes 20	_____
5. Gait/Transferring Normal/bedrest/immobile Weak Impaired	 0 10 20	_____
6. Mental status Oriented to own ability Forgets limitations	0 15	_____

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