Research

The effectiveness of nursing in intermediate care related to an integrated concept of dependency: a case study using the Modified Barthel index

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Abstract

Introduction. A new care setting was established In modern society, called intermediate care (IC). It refers to residential structures aimed at link hospital and patient's home, ensuring improved and personalized continuity of care and achieve better health outcomes. Patients admitted in this setting are usually elderly, with high levels of dependency. One of the most used assessment tools for dependency is Barthel Index (BI) and its modified version: the Modified Barthel Index (MBI). The aim of this paper is to verify if care in community hospital (intermediate care) improves patient independence (measured with Modified Barthel Index), and this improvement is linked to an appropriate care model.

Methods. A case study of a hypothetical patient has been developed, according to the Rosenberg Model. Data emerging from the case study has been compared with international literature. Care dependency is very a broad concept and includes both objective data and patient's perceptions. Care dependency, therefore, could be described and assessed from an objective and a subjective point of view, in term of person's affect. The case-analysis provides possible indicators regarding the meaning of dependency and is the start point for a targeted assessment of Nursing Diagnoses (NDs).

Results. The functional domains of NANDA-I taxonomy 2024-2026 related to dependency were identified through the case analysis. Each ND was examined with reference to objective and subjective diagnostic indicators, thus highlighting the

diagnoses related to each 14-independence topic presented by Hillcoat-Nallétamby. The MBI has been used as nursing outcome together with other psycho-social indicators.

Discussion

MBI is proved to be an indicator of the effectiveness of nursing care provided in the intermediate care settings. However, in order to define a patient as independent, the physical domain should be integrated with his/her psychosocial experiences according to identified Nursing Diagnosis.

Conclusion

An integrated nursing assessment leads to the identification of the Nursing Diagnosis influenced by the experience of dependency. Nursing Plan should include patient's emotions and other aspects related to his/her social life.

Keywords: Intermediate Care, Transitional Care, Barthel Index, Nursing Planning

Introduction

One of the most discussed topics in modern society is the ageing of the population and its consequences, such as the exponential increase of chronic-degenerative diseases and the complexity of care resulting[1]. Early discharge is due to the reduction of beds for acute patients in hospitals and to logistical and economic needs. A patient clinically stable and ready for discharge, however, could not be ready in terms of well-being, too. This may result in a delayed in discharge and/or in an increased risk of re-hospitalization [2]. The concept of intermediate care (IC) refers to residential structures aimed at link hospital and patient's home, ensuring improved and personalized continuity of care and achieve better health outcomes,[3.] although different definitions exist. According to Comodo and Maciocco[4] the aim of intermediate care is to ensure the continuity of care for the elderly with chronic clinical situations that no longer require hospitalization but cannot be managed at home or in an outpatient clinic. Patient's transition from hospital to home and vice versa, accelerating the course of the acute phase, prevention of unnecessary hospital admissions, and facilitating early discharge are qualifying goals of intermediate care[5].

Italy recognizes intermediate care as a new residential health care setting addressed to people with defined clinical issues, such as[6,7]:

- patients after the acute phase of the disease, clinically stable, who need still observation and therapeutic and/or rehabilitative continuity;
- patients with possible functional recovery;
- patients with a medium-low technological content and a high level of care required.

Intermediate care settings are community hospitals and nurse led units[8]. Patients admitted in these settings are usually elderly with many comorbidities, a high level of dependency in the early stages, low clinical complexity but high care complexity. They mainly need interventions such as: rehabilitation and therapeutic education[9,10]. In order to properly define what dependency is, we must distinguish the general concept from care dependency. Van der Heuvel in 1976[11] gave the following definitions and descriptions of dependency: in practical field, physical incapacity requiring the attention of others; need or inability in an interpersonal or social relationship; psychological need to be supervised, controlled, or supported. Dorothea Orem defines self-care as "activities that people perform in their own interest. Those might be actions to maintain one's life and life functioning, develop oneself and personal well-being or correct a health deviation or condition". Instead, she defines dependent care as 'activities which mature and responsible people undertake and carry out for socially dependent persons, for a certain period and continuously, in order to sustain their lives and contribute to their well-being and health' [12]. Virginia Henderson[13] states that human being is never completely independent. Orem and Henderson models[12,14] identified the variables defining care dependency, represented by Orem's 8 self-care spheres and Henderson's

14 essential components of nursing[11]. It might appear simple to identify patients' independence from nurses' point of view, but independence clearly has subjective basis. Independence from patients' point of view may, for example, be the ability to pick up the nephew at school or the ability to stay alone at home[15]. Hillcoat-Nallétamby shows that the different dimensions of independence for the elderly are 14, among which: some help if needed; resources, fear for institutionalization, not being a burden for formal and informal caregivers[15]. Piredda et al.[16] emphasize how difficult, and sometimes embarrassing, could be for patients ask for help. They could experience a sense of social regression and guilt. Care dependency arouses negative feelings, such as envy, suffering and embarrassment, but also positive experiences: patients feel pampered, loved, surrounded by selfless people and feel a sense of gratification when manage to have back even a part of the lost independence.[16]. To improve the quality of nursing planning the patient's dependency levels should be measured; many tools could be used for this purpose, one of the most studied is the Care Dependency Scale (CDS)[17]. The CDS is a 15-item scale based on Henderson's[13] framework, validated also in Italian [18,19]. Among intermediate care setting in Emilia Romagna region (Italy) the most used tool for dependency assessment is the Barthel Index (BI), designed to assess the functional independence for patients admitted to rehabilitation wards following cerebrovascular events; later, it has been applied on other patients populations[20]. A five-point system replaced in MBI, Modified Barthel Index[32], the original two or three- or four-point rating system[21]. The MBI allows the assessment of independency level analyzing the performance of main Activities of Daily Living (ADL)[20]. Moreover, the MBI allows distinguishing 5 categories of dependence based on the score obtained: total, severe, moderate, light and minimal dependence. Each category is linked with an estimated number of weekly care hours need[22]. According to Griffiths et al.[23] the MBI is an indicator of the effectiveness of nursing care provided in the intermediate care setting. It is important to note that the MBI is not the only indicator for nursing care effectiveness: in fact, even mortality, re-hospitalization and length of stay in hospital, must be taken into account during the assessment[24,25,26]. According to Al-Khawaja, the MBI is predictive on the hours of care needed for a particular patient [22]; in fact, the actual correlation between the level of dependence and the hours of care needed to reach the patient's goals is highlighted. The MBI is not influenced by age or diagnosis at admission, but rather by the skills of team members[25,27]. The mainly professional skills involved are: 1) assessment of the patient's health condition; 2) relationship with the patient; 3) prioritization of treatments affecting daily life; 4) education; 5) chronic conditions, in fact, requires advanced interpersonal and communicative skills[28]. The BI is predictive for long-term mortality and discharge timing. In addition, mortality is greatly influenced by the patient's admission diagnosis and therapeutic interventions related[5]. Mortality in this care setting is affected by a cascade process, whose steps are wrong patient evaluation at admission, treatments not tailored to intermediate care goals, and so on. For this reason, the patient's admission to intermediate care should be guided by the eligibility criteria defined by the main national guidelines[6]. Costs, re-admissions, BI and mortality may change, depending on the length of stay. The length of stay leads to higher costs, improved BI and less re-admission, but an early discharge can reduce the costs of care with an increase in mortality and repeated admissions to Community Hospital (CH)[24,29]. A shorter patient's hospitalization does not necessarily correspond to an overall money saving. The aim of this paper is to verify if care in community hospital (intermediate care) improves patient independence (measured with Modified Barthel Index), and this improvement is linked to an appropriate care model.

Methods

A case study of a hypothetical patient has been developed, according to the Rosenberg Model: a schematic representation of case study research design. Data emerging from the case study has been compared with international literature. The setting is a Community Hospital of Emilia Romagna region, Italy. Care dependency could be described and assessed from an objective and a subjective point of view, in term of person's affect. For this reason, the case-analysis provides possible indicators regarding the meaning of dependency and is the start point for a targeted assessment of Nursing Diagnoses (NDs). Each ND was examined with reference to objective and subjective diagnostic indicators (related

factors, risk factors and defining characteristics), thus highlighting the diagnoses related to each 14-independence topic presented by Hillcoat-Nallétamby[15]. Some nursing diagnosis, indeed, become evident when one or more of these 14 topic is not met. For this reason, overall, these diagnoses describe the condition of dependency. Therefore, the level of dependency is better described by a set of nursing diagnosis rather than the use of the MBI only. An example is reported in table 1.

Topic	Domain and ND

To not be a burden	6. SELF-PERCEPTION:
	class 2 – self-esteem:
	- 00483 - Chronic inadequate self-esteem;
	- 00480 - Risk for chronic inadequate self-esteem;
	- 00481 - Situational inadequate self-esteem;
	- 00482 - Risk for situational inadequate self-esteem
	9. COPING / STRESS TOLERANCE:
	class 3 – neurobehavioral responses:
	- 00241- Impaired mood regulation

Table 1. Example of independence topic and its correlation to NANDA-I taxonomy 2024-2026[31] domains and ND

In order to describe the global dependency of patient it is appropriate to assess any risk factors or defining characteristics of the NDs selected. The Domains affected by the experience of dependence are 8 of the 13 total domains of the NANDA International taxonomy 2024-2026, equal to 2/3 (table 2).

DOMAIN 1	Health Promotion
DOMAIN 4	Activity/rest
DOMAIN 5	Perception/ cognition
DOMAIN 6	Self-perception
DOMAIN 7	Role relationship
DOMAIN 9	Coping/ stress tolerance
DOMAIN 10	Life principles
DOMAIN 12	Comfort

Table 2. NANDA-I taxonomy 2024-26's domains affected by the experience of dependence

The case analysis has been conducted on a hypothetical patient, who, in this scenario, has recently hospitalized in CH. The domains concerned with dependence were assessed. During data analysis it was decided to replace the assessment of domain 4 with the Modified Barthel Index[31] which includes the sphere of mobility and self-care (score: 29 at admission).

Results

The nursing assessment was performed on a hypothetical male patient, age range of 70-80 years old, with a difficult wound caused by a fall, complicated by type 2 diabetes mellitus. Patient was affected by a strong tremor in the right hand and insecurity in placing the weight on the limb affected by injury, due to previous femur fracture. After hospital discharge, he was referred to a difficult wounds surgery unit, where he went 3 times per week for wound dressing, brought by his daughter. Home Care Service was activated at the same time, and he was listed as eligible for CH. During evaluation, his gait was clearly impaired, not only due to injury but also to a limb hypoesthesia prior to the accident. Thanks to the support of the rollator walker, he was autonomous in mobility and able to drive his car for short distances.

The assessment was carried out based on the independence themes presented by Hillcoat-Nallétamby[15]. If the independence topic was not met, one or more nursing diagnosis has been identified and the topic presence was defined as one of the nursing plan goals. The patient was asked for a personal vision of meaning of 'being healthy': he reported the desire to resume the activities that he was able to perform previously in his free time, such as fishing and dancing. Before the admission to CH, he was unable to be independent, he had been living with her daughter for a month, where he was supported for almost all activities. The patient reports that his strengths are sight, hearing, memory and possession of license, and it is thanks to this that he can manage to cope his days without feeling a burden for his caregivers. Table 3 shows data of a hypothetical interview, with a focus on the topics of independence before and after hospitalization in CH.

Topic	Before Community Hospital	After discharge
Availability of help in case of need	X	X
Accepting help, because accepting it doesn't mean not being independent	X	X
Not being able to carry out all actions in a complete way, but recognizing it and therefore be able to maintain his independence	X	X
Being able to help others, even with simple actions		X
Having friends, being able to socialize, being part of a group		X
Doing things on his own		X
Not to be a burden		X
Absence of fear of institutionalization	X	X
No sense of isolation	X	X
Being able to use his own resources	X	X
Lack of boredom	X	X
Living alone in his own home		X
Decision making	X	X

Table 3. Criteria of independence and interview data before and after CH

Analyzing deeply "Non to be a burden", it is clear that, before hospitalization, the patient felt uncomfortable with family members and other informal caregivers.

Discussion

The assessment of dependency needs not only of objective data, but also of other aspects, such as the level of experienced well-being, as described in the case analysis carried out. Some spheres of independence were not present before hospitalization in CH. Therefore, it was possible to understand which ND's domains were mostly affected by staying in the CH. Domain 4, assessed through the Modified Barthel Index, shows how the patient's physical deficits were an obstacle in the development of ADL. In addition, the sphere of social relations too has been greatly compromised; in fact, in Domain 7 (Role relationship) it was possible to find indicators of NDs and set as a goal the restore of social life to the precedent condition. The hypothetical patient has experienced a change of role, being unable to carry out activities with the same level of independence. This made him to feel a burden for his family, until he had to temporarily leave his home to simplify his daughter's care activities. Therefore, the correlation to NANDA-I taxonomy 2024-26 Domain 9 (Coping/ stress tolerance) is clear; in fact, it has been possible to identify the ND "Situationally inadequate self-esteem" (00481) reported in Table 1.

Finally, to define a patient as independent, the physical domain should be integrated with his/her psychosocial experiences, i.e. determining which independency themes are not met.

Study limits

Many limits could be identified in the present case study. First of all, the case study is just hypothetical, referring to a single situation, perhaps not completely relevant for other situations. Moreover, the tools adopted in Italian CHs are not completely up to date: i.e., the Care Dependency Scale could be used, as it is validated in Italian and is currently in the focus of the scientific literature[18,19].

Conclusion

An integrated nursing assessment leads to the identification of the Nursing Diagnosis influenced by the experience of dependency. Nursing Plan should include patient's emotions and other aspects related to his/her social life.

The MBI makes possible to assess mainly the domain 4 (Activity/Rest) of NANDA-I taxonomy 2024-26 and evaluate the physical and objective outcomes related to independency. However, evidence on this field is still lacking. In this perspective, more research about the use of 14-independence topics presented by Hillcoat-Nallétamby[15] for nursing assessment is needed to improve the quality of nursing plan, such as diagnostic studies on the assessment tools with an adequate sample.

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