Inappropriate hospital stays and association with lack of homecare services

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Abstract

Background: Efforts to reduce inappropriate hospital stay, including alternatives such as homecare, are important to improve patient care and reduce health care costs.

Aims: This study evaluated inappropriate hospital stay in Shiraz, Islamic Republic of Iran and the extent to which these stays were due to lack of homecare services and others factors needed for homecare.

Methods: This cross-sectional study was conducted between January 2018 and September 2019 at two public hospitals in Shiraz. All adult patients hospitalized in these two hospitals in the study period were included, except patients in mental care wards. Appropriateness of patients' hospital stay was assessed on a daily basis using the Iranian version of the Appropriateness Evaluation Protocol. The chi-squared test was used to assess association between need for homecare and patient characteristics.

Results: Of 6458 hospitalization days assessed (for 1954 patients), 710 (11.0%) days were inappropriate. The greatest proportion of causes of inappropriate stay were physician-related (32.9%). Of the 710 inappropriate hospitalization days, 231 were due to lack of homecare services. Most patients who were inappropriately hospitalized because of lack of homecare services were insured through Salamat insurance (64.0%). A statistically significant relationship was found between the need for homecare services and the type of health insurance (P = 0.01). Of the patients admitted to hospital because of lack of homecare services, 36.8% had endocrine diseases, especially diabetes, and 21.8% needed oxygen services.

Conclusion: Institutionalizing home health care in the Iranian health system could encourage more home health care referral and reduce inappropriate hospitalization, especially for diabetes.

Keywords: hospitalization, length of stay, homecare services, Iran

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Introduction

Hospitals are the main providers of health care services and play an important role in improving patients' physical and mental health. However, they account for the highest proportion of health care expenditure *(1)*. As a result of demographic changes in recent years (ageing population), demand for hospital beds has increased *(2,3)*. Data also show that 10–30% of hospital admissions are unnecessary *(4)*. Unnecessary hospitalization increases patient and health system costs, reduces patient access to critically required resources and increases the risk of nosocomial infections in patients *(5)*. In addition, unnecessary hospitalization leads to absence from work, which may have consequences on the society, and to negative emotional and psychological effects on families. Reducing inappropriate use of hospital services is a way to limit health care costs without compromising the quality of services *(6)*.

Therefore, reducing inappropriate and unnecessary use of hospital resources and unnecessary hospital stay is important. Thus, many health systems have turned to alternative methods of providing services including home health care. Pressure from ageing populations coupled with the epidemiological transition in disease patterns to chronic illnesses in adults, economic changes and advances in technology have led to wiser provision of social and health care services at home *(7,8)*. The World Health Organization (WHO) has also emphasized the importance of homecare services in response to the epidemiological, demographic and socioeconomic challenges the world is facing *(9)*.

Moreover, the effectiveness of homecare programmes has been demonstrated in various studies. For example, a study in Switzerland concluded that providing home-based chemotherapy services was safe and cost-effective and was satisfactory for patients and their families *(10)*. Furthermore, the involvement of patients with diabetes in homecare programmes has led to improved diabetes-related outcomes in these patients *(11)*. A study in Austria showed that patients with depression who received homecare services had fewer depressive symptoms, higher quality of life and lower hospitalization costs *(12)*.

Homecare services and post-discharge support reduce hospital stay and costs *(13)*. In order to cope with the ageing population and the increased demand for hospital beds, home health care may be an effective solution to help reduce costs and maintain the quality of service *(8)*.

Studies in the Islamic Republic of Iran have reported that 6.3–22.8% of hospital stays were inappropriate *(14,15)*. Efficient and cost-effective use of resources in countries such as the Islamic Republic of Iran, where funds allocated to the health care system are limited, is vital *(16)*. However, home health care in the Islamic Republic of Iran is faced with various challenges including insurance, medical equipment, acculturalization, and the lack of an appropriate standard on the amount and the process of homecare payment *(17)*.

Since home health care has many benefits for the patient and the health system, we aimed to evaluate the inappropriateness of patients' hospital stay and factors related to the inappropriate stay in Shiraz. We also determined whether the inappropriate hospital stay was because of the lack of homecare services and conditions, and if so, the condition these patients had and the type of services that they needed.

Methods

Study design and setting

This cross-sectional study was conducted between January 2018 and September 2019 at two public, teaching hospitals in Shiraz, Islamic Republic of Iran.

Study sample

The study population included all adult patients hospitalized in these two hospitals except for patients admitted to mental health wards. Thus, all surgical and internal wards, internal intensive care units, surgical intensive care units, cardiac care and neurological intensive care units of these two hospitals were included and followed for 252 days. Inclusion criteria were age > 18 years and at least 3 days of hospitalization.

Data collection

The appropriateness of the patient stay was assessed using the validated Iranian version of the Appropriateness Evaluation Protocol *(18)*. The first part of this tool assesses the need for hospitalization and the second part evaluates the reasons for an inappropriate stay. The first part includes 31 criteria related to medical services, critical/nursing care services and patient's conditions that must be met for hospitalization to be appropriate. If these criteria are not met, the patient's hospitalization is unnecessary. The second part includes 34 questions on the reasons for inappropriate stay classified in four categories; factors related to: the physician, the hospital, the patient and the environment, society and other organizations.

Every day, all patients in the wards of the hospitals were entered in the study and the questionnaire was completed through review of the patients' medical records and interviews with nurses, patients' companions and the patients themselves. Interviewers worked independently and interviewed each patient individually to complete the questionnaire.

For patients found to have an inappropriate hospital stay, we also determined whether these patients needed special care or procedures at home after discharge and if so, what services they needed.

Data were collected by qualified interviewers who had: specialized knowledge in reading patient medical records and cards; at least a bachelor degree in nursing; at least 5 years' experience in nursing services; and the ability to communicate verbally in appropriate dialects with the patients and their companions. The interviewers were trained on how to complete the questionnaire, and were assessed and approved before joining the interviewer team. In case of any ambiguity on the completion of the questionnaire, interviewers could telephone the research team for guidance/clarification.

Statistical analysis

We used *SPSS*, version 18 for data analysis. We present data as frequency and percentage. We used the chi-squared test to determine the significance of associations between demographic characteristic of the patients and the need for homecare services. $P< 0.05$ was considered statistically significant.

Ethical considerations

This study was approved by the Ethics Committee of Shiraz University of Medical Sciences (IR.SUMS.REC.1396.S738). After a full oral explanation of the study, we obtained written informed consent from all the patients or his/her companion. They were ensured of the confidentiality of the information by the interviewers and members of the research team.

Results

None of the patients declined to participate in the study. During the study period, 6458 questionnaires related to 1954 patients were completed and evaluated. Most patients were men (52.7%) and residents of Shiraz (57.6%). The greatest proportion (33.6%) were aged 61–80 years and almost half (49.9%) had Salamat insurance – one of the types of insurance in the Islamic Republic of Iran – (Table 1).

Of 6458 hospitalization days, 710 were considered inappropriate (11.0%). Because each day of hospitalization may have more than one reason for being inappropriate, the total reasons for inappropriate hospitalization in Table 2 are more than the 710 inappropriate days of hospitalization. The most common reasons for inappropriate stay were physician-related factors (32.9%). Lack of access to alternative care centres, failure to seek early consultation and postponement of surgery by the physician were the most common causes of inappropriate stay (Table 2).

Table 1 Demographic characteristics of the participants

Variable	No. (%), *n* = 1954
Sex	
Male	1029 (52.7)
Female	925 (47.3)
Place of residence	
Shiraz	1125 (57.6)
Other	829 (42.4)
Age group (years)	
18–40	439 (22.5)
41–60	624 (31.9)
61–80	656 (33.6)
81–100	235 (12.0)
Insurance type	
Salamat[a]	975 (49.9)
Social security	649 (33.2)
Armed forces	112 (5.7)
Other	38 (1.9)
No insurance	180 (9.2)

[a]*Type of health insurance in the Islamic Republic of Iran.*

Of the 710 inappropriate hospitalization days, 254 were due to lack of homecare services and conditions (unavailability of alternative service centres and/or social care centres, being without family at discharge and to provide homecare services, families' inability (financial or physical) to provide homecare services after discharge. After eliminating multi-causal hospitalization days, 231 of the 710 inappropriate hospitalization days were solely due to the lack of home care services. Patients who were inappropriately hospitalized because of lack of homecare services and conditions were mostly in the 61–80 year age range (37.6%), female (50.4%), from Shiraz (65.6%) and insured through Salamat insurance (64.0%). A statistically significant relationship was found between the need for homecare services and the type of insurance ($P = 0.01$) (Table 3).

The most common diseases of patients with inappropriate hospitalization due to the lack of homecare services and conditions were endocrine (36.8%), neurological (19.5%) and pulmonary (18.2%) diseases (Table 4).

The most common services that patients received in hospital due to the lack of homecare services were oxygen (21.8%), cleaning of sores (13.4%) and suction (13.2%) (Table 5).As each patient may be hospitalized inappropriately because of the need for several types of services, the total need for services was 417.

Discussion

To the best of our knowledge, this is the first study that shows the demand for home health care among hospitalized patients in the Islamic Republic of Iran. We hypothesized that inappropriate use of hospital may increase because of lack of home health care and that no hospital refers patients to home health care in the Islamic Republic of Iran. We found that 11.0% of hospital patient days were inappropriate, of which 32.5% (231/710) were due to lack of home health care services. Our results concur with a study in Belgium which showed that a large proportion of patients who could be discharged (31%) were not discharged because their families were unable to provide homecare services and there were difficulties in finding rehabilitation centres and nursing homes *(19)*. A study in the United States of America (USA) showed that 29.2% of patients discharged from hospital were referred to home health care *(1)*. Another American study also found that 88 of 194 (45.4%) elderly patients admitted in emergency departments could have benefited from a homecare referral *(20)*.

Home health care is still in its infancy in the Islamic Republic of Iran and is not yet well established in the health system. This shortcoming is also mentioned in the Lebanese health system *(21)*. There is no comprehensive information system of a registered home health care in the country *(22)* so hospitals do not have any discharge plan for referral to home health care. Moreover, lack of standardized criteria that can be used to assess the need for home health care at discharge in Iranian hospitals might be another reason for not referring patients to home health care. As reported in a study on discharge referral decision-making, clinicians have no standardized and valid guidelines for home health care referral decisions, and use of such guidelines can support them for evidence-based decision-making *(23)*.

Another reason for hospital stays is that home health care is not covered by Iranian health insurance plans. As our findings showed, there was a significant relationship between the insurance type and the need for homecare services. Patients who had Salamat insurance stayed in hospital although they needed homecare services because this insurance scheme covers a large percentage of patient hospital costs, but home health care is not included in the health package. In the USA, where home health care is covered by Medicare, about 30% of hospitalized patients insured through Medicare were referred to homecare centres after discharge in 2012 *(1)*. Research shows that increasing the reimbursement of Medicare insurance for homecare services has led to an increase in the use of homecare services by the insured *(24)*.

Our findings showed the most of the patients hospitalized because of lack of home health care had endocrine diseases, especially diabetes, and neurological diseases. Research in the USA also showed that most patients receiving homecare services from 2000 to 2007 had diabetes mellitus (10.1%) *(25)*. A study on non-English-speaking patients in the USA found that homecare interventions were an effective way to control diabetes; after 24 months of receiving homecare services, patients had improved stability of their blood glucose, blood pressure and lipids and their outpatient visits decreased *(11)*. As a start, Iranian health policy-makers should recommend referral of patients with diabetes and

Table 2 Factors related to inappropriate hospitalization days

Causes	No. (%)
Related to the physician	
Postponement of surgery by the physician	76 (7.4)
Failure of physician to issue a timely discharge order	42 (4.1)
Physician's lack of cooperation with the treatment team	8 (0.8)
Absence of a physician	13 (1.3)
Delays in examination and diagnosis	14 (1.37)
Patient hospitalization for physiotherapy and diagnostic services although they can access these services in outpatient clinics	13 (1.3)
No request for timely consultation	127 (12.4)
No request for timely tests and other services	45 (4.4)
Subtotal	338 (32.9)
Related to the hospital	
Problems in surgical plans	63 (6.1)
Failure of hospital to plan for timely discharge	11 (1.1)
Postponement of surgery by the hospital	12 (1.2)
Delays in test response	25 (2.4)
Delays in consultation	60 (5.8)
Defects in and breakdown of medical devices and equipment	8 (0.8)
Problems in insurance, discharge and payment	6 (0.6)
Delays in patient referral to other centres	38 (3.7)
Procedures not performed during weekends and public holidays	66 (6.4)
Early admission[a]	1 (0.1)
Subtotal	290 (28.3)
Related to the patient and his/her family	
Patient and family insistence on staying in hospital	14 (1.4)
Patient and family failure to give consent for a procedure	42 (4.1)
Patient disagreement with the treatment plan	29 (2.8)
Patient financial problems	23 (2.2)
Patient without a family available on discharge and to provide homecare services	7 (0.7)
Family unable to be available on discharge and to provide homecare services	52 (5.1)
Patient avoidance of outpatient and medical examinations[b]	2 (0.2)
Subtotal	169 (16.5)
Related to the environment, society and the organization	
Alternative service centres not available (e.g. nursing homes, rehabilitation centres and chronic diseases centres)	166 (16.2)
Social care centres not available (non-acute centres such as homecare services and sanatoriums)	29 (2.8)
Lack of low level health services[c]	14 (1.4)
Lack of outpatient diagnostic centres	9 (0.0)
Failure of outpatient centres to plan for timely discharge	5 (0.5)
Legal problems of patient discharge	2 (0.2)
Unclear destination of the patient after discharge	4 (0.4)
Waiting for admission to other hospitals or specialized centres	0 (0)
Subtotal	229 (22.3)
Total	**1026 (100.0)**

[a]*Patient is admitted earlier than needed as processes and tests that can be done before admission and hospitalization were done after hospitalization.*
[b]*Patient avoids outpatient and periodic medical examinations and is hospitalized because recurrence of the disease.*
[c]*Primary care and outpatient and non-hospital health services.*

neurological diseases to home health care to encourage the use home health care which can result in reduced use of hospital beds and associated care costs. An Iranian study also reported that providing home health care for stroke patients was more cost-effective than hospital care *(26)*. In addition, modern technologies used to treat

Table 3 Need for homecare services according to patient demographic characteristics

Variable	Need homecare services		Statistics
	Yes (n = 125)	No (n = 222)	
	No. (%)	No. (%)	
Sex			
Male	62 (49.6)	110 (49.5)	χ^2 = 0.00, df = 1, P = 0.99
Female	63 (50.4)	112 (50.4)	
Place of residence			
Shiraz	82 (65.6)	128 (57.7)	χ^2 = 2.11, df = 1, P = 0.14
Other	43 (34.4)	94 (42.3)	
Age group (years)			
18–40	14 (11.2)	44 (19.8)	χ^2 = 6.03, df = 3, P = 0.11
41–60	42 (33.6)	81 (36.5)	
61–80	47 (37.6)	68 (30.6)	
81–100	22 (17.6)	29 (13.1)	
Insurance type			
Salamat[a]	80 (64.0)	100 (45.0)	χ^2 = 13.1, df = 4, P = 0.01
Social security	29 (23.2)	73 (32.9)	
Armed forces	12 (9.6)	28 (12.6)	
Other	2 (1.6)	9 (4.1)	
No insurance	2 (1.6)	12 (5.4)	

df= degrees of freedom.
[a]*Type of health insurance in the Islamic Republic of Iran.*

Table 4 Distribution of inappropriate hospitalization days due to lack of homecare services and conditions according to disease

Disease classification and type	No. (%)
Diseases of the liver	
Jaundice	1 (0.4)
Acute hepatic failure	1 (0.4)
Skin diseases	
Skin grafting	1 (0.4)
Endocrine diseases	
Diabetic foot	10 (4.3)
Acute complications of diabetes mellitus	71 (30.7)
Post-thyroidectomy	4 (1.7)
Gastrointestinal disease	
Bowel obstruction	1 (0.4)
Gastrointestinal or rectal bleeding	6 (2.6)
Poisoning	4 (1.7)
Cardiovascular disease	
Hypertension	1 (0.4)
Congestive heart failure or heart failure	6 (2.6)
Atrial fibrillation	1 (0.4)
Renal disease	
End-stage renal disease	2 (0.9)
Ure sepsis	3 (1.3)
Radical cystectomy	1 (0.4)
Urinary tract infection	1 (0.4)
Renal failure	1 (0.4)

Table 4 Distribution of inappropriate hospitalization days due to lack of homecare services and conditions according to disease *(continued)*

Disease classification and type	No. (%)
Percutaneous nephrolithotomy	1 (0.4)
Transurethral resection of the prostate	1 (0.4)
Neurological disease	
Cerebrovascular accident	21 (9.1)
Loss of consciousness	6 (2.6)
Headache or vertigo	2 (0.9)
Central nervous system vasculitis or vasculitis	3 (1.3)
Cranioplasty	2 (0.9)
Cervical cord injury	2 (0.9)
Brain abscess or brain mass	2 (0.9)
Epilepsy	2 (0.9)
Amyotrophic lateral sclerosis	2 (0.9)
Myasthenia gravis	1 (0.4)
Alzheimerdisease	1 (0.4)
Cerebralischemia	1 (0.4)
Pulmonary disease	
Pulmonary embolism	2 (0.9)
Pleural effusion	2 (0.9)
Chronic obstructive pulmonary disease	8 (3.5)
Pneumonia	16 (6.9)
Pneumo-thromboembolism	2 (0.9)
Respiratory arrest	2 (0.9)
Asthma	4 (1.7)

Table 4 Distribution of inappropriate hospitalization days due to lack of homecare services and conditions according to disease *(concluded)*

Disease classification and type	No. (%)
Dyspnoea or dyspnoea after coronary artery bypass grafting	5 (2.2)
Lung fibrosis	1 (0.4)
Internal infectious	
Sepsis	1 (0.4)
Infection	1 (0.4)
Influenza	1 (0.4)
Oedema	1 (0.4)
Skeletal disease	
Septic arteritis	1 (0.4)
Becker muscular dystrophy	2 (0.9)
Camurati–Engelmann disease	3 (1.3)
Ischium	1 (0.4)
Gynaecological disease	
Breast cancer	3 (1.3)
Unknown diagnosis	13 (5.6)
Total	**231 (100.0)**

Table 5 Type of services provided for patients in hospital because of lack of homecare services

Service type	No. (%)
Oxygen	91 (21.8)
Cleaning sores	56 (13.4)
Suction	55 (13.2)
Tracheostomy care	51 (12.2)
Bedsore care	47 (11.3)
Nasogastric tube	44 (10.6)
Foley care	38 (9.1)
Dressing change	17 (4.1)
Physiotherapy	13 (3.1)
Immobility care	4 (1.0)
Double lumen catheter	1 (0.2)
Total	**417 (100.0)**

and reduce diabetes complications (both outpatient or at home) can easily replace hospital care services.

We found that patients whose stay in hospital was inappropriate were there to receive services such oxygen (21.8%), cleaning of sores (13.4%) and suction therapy (13.2%) which they could receive at home. Similarly, research showed that the greatest care needs of patients after discharge in the Islamic Republic of Iran were administration of a catheter and the care of wounds and dressings *(27)*. A systematic review of home mechanical ventilation showed that such home care improved the quality of life of patients and reduced the number of hospitalizations *(28)*. Even so, the rate of use of home mechanical ventilation varies considerable by country: 2.9 users of home mechanical ventilation/100 000 population in Hong Kong, 3.9/100 000 in Hungary, 9.9/100 000 in Australia, 10.5/100 000 in Sweden, 1/100 000 in New Zealand and 12.9/100 000 in Canada *(29–33)*.

The most important limitation of our study was its focus on patients with inappropriate hospital stay to estimate home health care demand at discharge. We did not include patients with appropriate stay who may also need home health care after discharge. Therefore the demand may be higher that our results suggest.

Institutionalizing home health care in the Iranians health system could improve the appropriate use of hospital beds, reduce health system costs, decrease readmission rates and prevent hospital complications such as falling out of bed and nosocomial infections *(34,35)*. Covering home health care under the Iranian health insurance plan will encourage more home health care referral and reduce inappropriate hospitalization, especially for diabetes and neurological diseases. Registries of home health care centres that can provide care to patients referred by hospitals and family physicians would enhance a home health care system.

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Séjours hospitaliers inappropriés et association avec le manque de services de soins à domicile

Résumé

Contexte : Les efforts qui visent à réduire les séjours hospitaliers inappropriés, notamment des alternatives telles que les soins à domicile, sont importants pour améliorer les soins prodigués aux patients et réduire les coûts des soins de santé.

Objectifs : La présente étude a évalué les séjours hospitaliers inappropriés à Chiraz (République islamique d'Iran) pour examiner dans quelle mesure ces séjours étaient dus au manque des services des soins à domicile et à d'autres facteurs nécessaires à la mise en place de ces services.

Méthodes : La présente étude transversale a été menée entre janvier 2018 et septembre 2019 dans deux hôpitaux publics à Chiraz. Tous les patients adultes admis dans ces deux hôpitaux pendant la période d'étude ont été inclus, sauf les patients des services de soins psychiatriques. La pertinence des séjours hospitaliers des patients a été évaluée sur une base quotidienne à l'aide de la version iranienne de l'outil *Appropriate Evaluation Protocol* (Protocole d'évaluation de la pertinence). Le test du khi carré a été utilisé pour évaluer l'association entre les besoins en matière de soins à domicile et les caractéristiques du patient.

Résultats : Sur 6458 journées d'hospitalisation évaluées (pour 1954 patients), 710 journées (11,0 %) étaient inappropriées. La plus grande proportion des causes des séjours inappropriés était liée aux médecins (32,9 %). Sur 710 journées d'hospitalisation inappropriée, 231 étaient dues au manque de services de soins à domicile. La plupart des patients hospitalisés d'une façon inappropriée à cause de l'absence de services de soins à domicile bénéficiaient de l'assurance Salamat (64,0 %). Une relation statistiquement significative a été constatée entre le besoin en matière de soins à domicile et le type d'assurance-maladie (p = 0,01) ; 36,8 % des patients admis à l'hôpital en raison du manque des services de soins à domicile étaient atteints de maladies endocriniennes, notamment de diabète, et 21,8 % avaient besoin de services d'oxygène.

Conclusion : L'institutionnalisation des soins de santé à domicile dans le système de santé iranien pourrait encourager davantage l'orientation vers les soins à domicile et réduire les hospitalisations inappropriées, notamment pour les patients diabétiques.

الإقامة غير الملائمة في المستشفيات وعلاقتها بنقص خدمات الرعاية المنزلية

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الخلاصة

الخلفية: من المهم بذل جهود للحد من الإقامة غير المناسبة في المستشفيات، بما يشمل توفير بدائل مثل الرعاية المنزلية، لتحسين رعاية المرضى وخفض تكاليف الرعاية الصحية.

الأهداف: هدفت هذه الدراسة إلى تقييم الإقامة غير المناسبة في المستشفيات في مدينة شيراز، جمهورية إيران الإسلامية وإلى أي حد هذه الإقامة ناجمة عن نقص خدمات الرعاية المنزلية وغيرها من العوامل اللازمة للرعاية المنزلية.

طرق البحث: أُجريَت هذه الدراسة المقطعية في الفترة بين يناير/ كانون الثاني 2018 وسبتمبر/ أيلول 2019 في مستشفيين عامين بمدينة شيراز. وأُدرج جميع المرضى البالغين الذين تم إدخالهم إلى هذين المستشفيين في فترة الدراسة، باستثناء المرضى في أجنحة الرعاية النفسية. كما قُيِّم مدى ملاءمة إقامة المرضى في المستشفيات بصفة يومية باستخدام النسخة الإيرانية من بروتوكول تقييم مدى الملاءمة. واستُخدم اختبار مربع كاي (χ^2) لتقييم العلاقة بين الحاجة إلى الرعاية المنزلية وخصائص المرضى.

النتائج: من بين 6458 يومًا لفترة الإدخال إلى المستشفى التي تم تقييمها (بما يشمل 1954 مريضًا)، اتسمت الإقامة بعدم الملاءمة في 710 أيام (11.0٪). وكانت النسبة الأكبر من أسباب الإقامة غير الملائمة متعلقة بالطبيب (32.9٪). ومن بين 710 أيام غير ملائمة للإقامة في المستشفى، كان 231 يومًا منها يعود إلى نقص خدمات الرعاية المنزلية. وكان معظم المرضى الذين أُدخلوا إلى المستشفى بشكل غير ملائم بسبب نقص خدمات الرعاية المنزلية مُؤمَّناً عليهم من خلال تأمين "سلامات" (64.0٪). ووُجد أن هناك علاقة ذات دلالة إحصائية بين الحاجة إلى خدمات الرعاية المنزلية ونوع التأمين الصحي (p=0.01). ومن بين المرضى الذين أدخلوا إلى المستشفى بسبب نقص خدمات الرعاية المنزلية، كان 36.8٪ يعانون من أمراض الغدد الصماء، لا سيَّما السكري، وكان 21.8٪ يحتاجون إلى خدمات الأكسجين.

الاستنتاج: إن إضفاء الطابع المؤسسي على الرعاية الصحية المنزلية في النظام الصحي الإيراني يمكن أن يشجع المزيد من خدمات الإحالة إلى الرعاية الصحية المنزلية، ويحدّ من الإدخال غير الملائم إلى المستشفيات، لا سيَّما بالنسبة لمرضى السكري.

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