Risk Factors Associated with the Refusal of Surgery Vouchers: The Case of Central Portugal

Fatores de Risco Associados à Recusa de Notas de Transferência e Vales Cirurgia: O Caso da Região Centro em Portugal

ARTIGO ORIGINAL

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Acta Med Port 2022 Mar;35(3):201-208 ▪ https://doi.org/10.20344/amp.15357

ABSTRACT

Introduction: In Portugal, the rate of refusals regarding transfer between hospitals through surgery vouchers is high, which makes it difficult to meet maximum waiting times for elective surgeries. The objectives of this study are to examine how many vouchers were issued and refused between the third quarter of 2016 and the fourth quarter of 2019 and the risk factors associated with their refusal, in Central Portugal

Material and Methods: Data was obtained in the database of cancelled vouchers and the waiting list for surgery on the 31st December 2019. Multiple logistic regression was used to investigate risk factors.

Results: The number of issued vouchers increased after 2018 and the rate of refusals has been above 55% since the 3rd quarter of 2018. Refusal was more likely for individuals aged 55 years or above (OR = 1.136; CI = 1.041 – 1.240; OR = 1.095; CI = 1.005 – 1.194; OR = 1.098; CI = 1.002 – 1.203, for the age bands 55 - 64, 65 - 74 and 75 - 84, respectively), for inpatient surgery when compared to ambulatory (OR = 2.498; CI = 2.343 – 2.663) and for Orthopaedics when compared to General Surgery (OR = 1.123; CI = 1.037 – 1.217). The *odds* of refusal also varied across hospitals (for example OR = 3.853; CI = 3.610 – 4.113; OR = 3.600; CI = 3.171 – 4.087; OR = 2.751; CI =3.383 – 3.175 e OR = 1.337; CI = 1.092 – 1.637, for hospitals identified as HO_2, HO_7, HO_4 and HO_6, respectively).

Conclusion: In this study, we have confirmed that the number of issued surgery vouchers increased after the administrative reduction of maximum waiting times in 2018 and that the rate of transfer refusals has been increasing since 2016 and has remained above 55% from the third trimester of 2018 onwards. Some of the factors for which we obtained a positive association with refusal are age, inpatient surgery (compared to ambulatory) and Orthopaedics (compared to General Surgery).

Keywords: Elective Surgical Procedures; Health Services Accessibility; Portugal; Risk Factors; Surgical Procedures; Waiting Lists

RESUMO

Introdução: Em Portugal, a recusa de Notas de Transferência e Vales Cirurgia é elevada, dificultando o cumprimento dos tempos máximos de resposta garantidos para cirurgias eletivas. Os objetivos deste estudo foram analisar a evolução de notas e vales emitidos/recusados para o período compreendido entre o terceiro trimestre de 2016 e o quarto trimestre de 2019 e os fatores de risco associados à sua recusa, na Região Centro, em Portugal.

Material e Métodos: Os dados provêm da base de dados de notas/vales cancelados e da lista de inscritos para cirurgia a 31 de dezembro de 2019. Na análise dos fatores de risco recorremos à regressão logística múltipla.

Resultados: A emissão de notas/vales aumentou após 2018 e as taxas de recusa de transferência mantiveram-se acima dos 55% a partir do terceiro trimestre de 2018. A *chance* de recusa foi maior para idades superiores a 55 anos (OR = 1,136; IC = 1,041 – 1,240; OR = 1,095; IC = 1,005 – 1,194; OR = 1,098; IC = 1,002 – 1,203, para as faixas etárias 55 - 64, 65 - 74 e 75 - 84, respetivamente) para a cirurgia convencional, quando comparada com ambulatório (OR = 2,498; IC = 2,343 – 2,663) e para a especialidade de Ortopedia, quando comparada com Cirurgia Geral (OR = 1,123; IC = 1,037 – 1,217). A *chance* de recusa variou também entre hospitais (por exemplo OR = 3,853; IC = 3,610 – 4,113; OR = 3,600; IC = 3,171 – 4,087; OR = 2,751; IC = 3,383 – 3,175 e OR = 1,337; IC= 1,092 – 1,637, para os hospitais de origem identificados como HO_2, HO_7, HO_4 e HO_6, respetivamente).

Conclusão: Neste estudo confirmou-se que a emissão de notas de transferência/vales cirurgia aumentou após a redução legal dos tempos máximos de resposta garantidos em 2018 e que as taxas de recusa de transferência vinham já a registar uma tendência de aumento desde 2016, tendo-se mantido acima dos 55% a partir do terceiro trimestre de 2018. Alguns fatores para os quais se encontrou uma associação positiva com a recusa são a idade, a cirurgia convencional (em comparação com ambulatório) e a especialidade de Ortopedia (em comparação com Cirurgia Geral).

Palavras-chave: Acesso aos Serviços de Saúde; Fatores de Risco; Listas de Espera; Portugal; Procedimentos Cirúrgicos; Procedimentos Cirúrgicos Eletivos

INTRODUCTION

Waiting times and waiting lists for healthcare services as a whole as well as elective surgery represent a major health policy issue in most countries of the Organisation for Economic Co-operation and Development (OECD).[1] Waiting

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Recebido: 19 de novembro de 2020 - **Aceite:** 17 de maio de 2021 - ***First published*:** 04 de janeiro de 2022 - ***Online issue published*:** 02 de março de 2022

times for elective surgery have remained unchanged over the past decades in some OECD countries, while these have increased even before the COVID-19 pandemic.[2] Apart from different constraints and waiting times underlying the contacts of the patients with the health services, the time between the date when patients are registered on the waiting list for a specific procedure, following the medical evaluation and the date when patients are admitted to a clinical department for that procedure correspond to the most frequent interpretation of waiting time for elective surgery.[3] This is also the interpretation underlying this article.

Any supply/demand imbalance for healthcare services lead to waiting times. In a traditional market scenario, price adjustment is obtained by matching supply to demand. In the health sector and in countries with universal coverage, combined with no co-payments or with low co-payments and limited resources, waiting times emerge as an alternative price rationing mechanism independent of the ability to pay.[4] Trends including the increase in life expectancy of the population, the number of patients with chronic diseases and the emergence of new drugs and health technologies have contributed to an increase in waiting lists, while increasing the supply of services and the productivity of healthcare providers contribute to the reduction in waiting lists.[1]

From an efficiency point of view, waiting times are relevant to avoid under-utilisation of installed capacity[5] and may even put pressure on hospitals to increase their productivity.[1,3] However, long waiting times may lead to increased costs for providers due to the management of waiting lists.[6] From the patients' perspective there are different disadvantages associated with waiting times, including the deterioration of their health status and of their autonomy, prolonging their suffering and anxiety, reducing the quality of life.[3,7-9] In addition, there are different response times in OECD countries, even considering the public sector. This inequality tends to favour patients with higher socioeconomic status.[10,11]

Considering these issues, some policy measures have been adopted to reduce patient wait times that are excessive. Some are supply-side such as temporary increases in the services offered with extra funding, improved list management, outsourcing to private and social sectors or activity-based payments to encourage greater efficiency. On the demand side, there are examples such as rules to prioritise patients and subsidisation of private insurance. Because of their recognised greater effectiveness, an increasing focus on combined policies such as maximum guaranteed response times [*tempos máximos de resposta garantidos* (TMRG)], whether associated with sanctions, and user choice and competition between providers, have been found in different OECD countries.[1,12] TMRGs are aimed at ensuring the provision of the required service within a predefined period according to what is considered as clinically acceptable for each case.

In many countries, TMRGs have been increasingly associated with the patient's choice of provider as a way to effectively ensure the maximum times.[1] In theory, the possibility of choice is expected to lead to an increased quality of services and productivity due to the competition between institutions in order to attract users and funding.[13] In turn, the quality of care perceived by patients will depend on different determinants, including the reputation of hospitals, the competence of professionals and interpersonal relationships.[14,15] Despite the predictable influence of the quality of services on the patient's choice, this is a challenging process with other factors involved, including (i) the fact that choices are related to the conditions offered by institutions and (ii) the fact that choices may be influenced by recommendations made by acquaintances or healthcare professionals as well as by locations, with a preference for institutions close to the patient's area of residence, especially in the case of elderly patients.[16]

In Portugal, waiting times have also been a cause for concern within the scope of health policy over the past decades. Measures have been adopted, aimed to manage surgical waiting lists. The *Programa Específico de Recuperação de Listas de Espera* (Specific Program for the Recovery of Waiting Lists) was developed and remained active from 1995-98 and was the initial measure[1,17] which was followed in 2004 by the *Sistema Integrado de Gestão de Inscritos para Cirurgia* – SIGIC (Integrated Surgical Register Management System) which is still in force. Law 41/2007 of 24 August 2018 introduced the concept of TMRG within the framework of the *Carta dos Direitos de Acesso aos Cuidados de Saúde no SNS* (Charter of Rights of Access to Healthcare within the SNS) and the specific times were later defined in 2008 by Administrative Rule no. 1529/2008 of 26th December.[19] Freedom of choice for patients was established by Administrative Rule no. 45/2008 of 15th January.[20] According to this model, in Portugal, whenever 50% of the TMRG has been reached, a *Nota de Transferência* (Transfer Note) (NT) is issued, allowing the patients to undergo surgery at a different public hospital. Whenever 75% of the TMRG has been reached, a *Vale Cirurgia* (Surgery Voucher) (VC) is issued, allowing the patients to undergo surgery within a wider range of institutions from the public, private and social sectors. Patients are given the right to refuse transfer and the circumstance of a high number of refusals was found more than a decade ago.[21] A very low utilisation rate of NT/VC (20%) remained throughout the 2014 – 2016 triennium.[22] The reduction of TMRG, meaning that patients now receive a NT/VC earlier, was implemented with the *Portaria* no. 153/2017 of 4 May,[23] with effect from 1 January 2018, which may further increase the already high refusal rate of these mechanisms.

Therefore, understanding the risk factors associated with the refusal of NT/VC is crucial to design strategies to increase their effectiveness, thus contributing to a better compliance with TMRGs.

To our knowledge, the only study on transfer refusal was based on 2007 data,[21] with a different methodology and

study sample from those used in this study.

This study was aimed at assessing these risk factors within the Central Region of Portugal and analysed the evolution of NT and VC that were issued and refused between the third quarter of 2016 and the fourth quarter of 2019.

MATERIAL AND METHODS

Data regarding the Central Region of Portugal were collected, including (i) monthly issued NT/VC, obtained from the *Administração Central do Sistema de Saúde* - Central Administration of the Health System (ACSS, IP), between 1 July 2016 and 31 December 2019; (ii) cancelled NT/VC, per reason, obtained from the Sistema *Integrado de Gestão da Lista de Inscritos para Cirurgia* - Integrated Management System of the Surgical Register List (SIGLIC), for the same period; (iii) *lista de inscritos para cirurgia* - surgical waiting list (LIC) as of 31 December 2019, obtained from the SIGLIC. Data from the SIGLIC were obtained from the *Administração Regional de Saúde do Centro* (ARSC, IP).

A total of 87,215 observations were initially found in the database of cancelled NT/VC, including information on the referring hospital (RH), surgical specialty, position number within the LIC of the RH, reason for cancellation and date of voucher cancellation. Only the reason for 'Refusal of Transfer' was considered for the analysis of the quarterly evolution of NT/VC that were issued and cancelled, including 71,504 observations.

A total of 50,382 episodes were initially included in the LIC database, each one including data on the patient's clinical file (original case number, destination case number, inclusion date, level of priority, patient's age, gender, RH, original LIC number, destination LIC number, surgical specialty, surgery code and designation, surgical modality (conventional or outpatient), pathology code, pathology, waiting time (in months), patient's current status, scheduling date, patient's location, sorting code and description, nosological group code and description, referring physician.

Only patients with legal age were considered for the analysis of risk factors associated with the refusal of NT/VC, assuming that minors did not decide whether to refuse NT/ VC. Therefore, 3,291 observations were removed from the initial database.

Waiting time and level of priority for each clinical episode were obtained considering the updated TMRG defined for each pathology and level of priority, in addition to the waiting time and level of priority for each clinical episode described in the LIC: <50%, ≥50% and <75%, ≥75% and <100%, or >100% of the TMRG. It was assumed that all episodes with waiting times <50% did not qualify for a NT or VC and were therefore removed from the database. The final sample used in the regression analysis corresponds to 33,153 observations.

'Refusal' binary variable was considered as dependent variable in the analysis, taking the value 1 when patients refused a NT/VC and 0 otherwise. This variable construct was based on the number of the originating LIC in the database of cancelled NT/VC compared with the number of the originating LIC in the database of episodes waiting for surgery as of 31 December 2019. Whenever the LIC numbers match, it means that there was a NT/VC cancellation due to refusal of transfer. Therefore, in cases where the numbers of the LICs overlap, the 'Refusal' variable takes the value one, while 'Refusal' variable takes the value zero in cases where the LIC number of the episodes on hold as of 31 December has no match in the database of cancelled NT/VCs.

Sociodemographic variables and variables related to the patient's clinical file were selected as explanatory variables, considering the information available in the database. For this purpose, patient's gender and age, RH, level of priority, modality, surgical specialty and the period of registration on the waiting list (whether before or after the redefinition of the TMRGs) were considered. The categorisation of these variables, their description and representativeness in the sample are shown in Table 1.

Multiple logistic regression was used to analyse the association between the different factors considered in this study and the refusal of NT/VC. SPSS 26.0® software was used. The results are shown in terms of odds ratio [ratio of the chance of exposure (in this case, NT/VC refusal) in each group divided by the chance of exposure in another group, considered as the reference category]. In turn, chance is also a ratio of the probability of success (NT/VC refusal) and the probability of failure (NT/VC non-refusal). Chance is therefore a different concept from probability. Considering for example gender variable (considering 'female' as reference), whenever 80 out of 100 male patients have refused NT/VC, a 0.8 probability of refusal is considered and 0.2 is the probability of non-refusal. The chance of refusal among men will be 80 to 20, or 4 (= 0.8/0.2). In the case of female patients, 75 out of 100 have refused NT/VC, then 0.75 was the probability of refusal and 0.25 the probability of non-refusal; 3 will correspond to the chance of refusal among female patients (= 0.75/0.25). From this example, an odds ratio of 1.33 (= 4/3) is obtained, corresponding to a chance or possibility of refusal of NT/VC among male patients 1.33 times greater than the chance of refusal of NT/VC among female patients.

As regards ethical issues, the study was approved by ARSC, IP. The request was forwarded to the Ministry of Health (Order No. 6741/2019 of 29 July, received by one of the authors on 23 August 2019).[24] A commitment was expressed not to disclose the identification of the hospitals. Therefore, hospitals are identified with numbers and the descriptive statistics that could somehow allow their identification were removed.

RESULTS

A 31% refusal rate was obtained (Table 1) (57% female patients; 25% of the patients aged 65-74 and 23% aged 75 - 84 years). There was a balance between the number

Table 1 – Variables used in the regression analysis

Variable	Number of observations (n = 33,153)	Relative frequency (%)
Dependent variable		
Refusal	10,372	31.3
Explanatory variable		
Gender		
Male	14,240	43.0
Age		
Age_18_44§	5,165	15.6
Age_45_54	4,163	12.6
Age_55_64	6,058	18.3
Age_65_74	8,267	24.9
Age_75_84	7,577	22.8
Age_85+	1,923	5.8
Referring hospital		
HO_1§	*	*
HO_2	*	*
HO_3	*	*
HO_4	*	*
HO_5	*	*
HO_6	*	*
HO_7	*	*
HO_8	*	*
HO_9	*	*
HO_others	*	*
Level of priority of surgery		
Normal§	30,536	92.1
Priority surgery	2,617	7.9
Surgical modality		
Outpatient§	16,371	49.4
Conventional	16,782	50.6
Surgical specialty		
General surgery§	5,586	16.8
Eye surgery	10,938	33.0
Orthopaedic	7,977	24.1
Others	8,652	26.1
Period post/pre TMRG redefinition		
Inclusion year†	31,406	94.7

§: Reference category
†: Registration on waiting list was made in 2018 or 2019
*: These statistical data were removed to prevent hospital identification. Three referring hospitals with larger dimension represented 79% of the sample.

of patients waiting for outpatient surgery and the number of those waiting for conventional surgery and Ophthalmology is the specialty that stands out, with a 33% prevalence rate. Only 8% of the patients on the waiting list were included with a very high priority. Three hospitals accounted for 79% of the LIC registrations. Finally, patients were mostly registered on the list in 2018 or 2019.

A higher number of issues was always found after the implementation of the new TMRGs when compared with before, as shown in Fig. 1, except for the first quarter of 2018. Over 12,000 NT/VC were issued between the second quarter of 2018 and the second quarter of 2019, while the highest number of these before the TMRG update was found within the fourth quarter of 2016. The lowest rate of refusals was found on the first quarter of 2017 (30%) and the highest on the fourth quarter of 2019 (68%). In general, a higher rate of refusals was found after the implementation of the new TMRGs when compared with before. The only exception corresponded to 51% on the second quarter of 2018, below the 55% rate found on the fourth quarter of 2017. However, it is worth mentioning that, with the exception of the fourth quarter of 2016 (which was atypical within the period before 2018 - in the context of a *Relatório do Tribunal de Contas* - Court of Auditors Report, constraints regarding the NT/VC printing process were described by the ACSS in 2016[22] and therefore this atypical figure may have been explained by catching up the delays), the rate of refusals had been increasing significantly even before the new TMRGs. An increase (33 to 55%) in the rate of refusals was found between the first and the fourth quarter of 2017, while the rate of refusals remained almost unchanged beyond the first quarter of 2018, although at high levels (roughly between 55% - 65%). In fact, the rate remained under 60% during the first three quarters of 2019, suggesting a reduction when compared to 2018. However, two significant changes were found during the final quarter of 2019 - issues decreased by one fifth while the percentage of refusals went in the opposite direction, showing a 10% increase (representing in this case a 17% increase).

Regarding the regression analysis, the Omnibus test showed a statistically significant difference has been found between the model with only the constant and the model including the explanatory variables ($p < 0.001$). The results for the odds ratio are shown in Table 2.

The results did not show an association between the patient's gender and NT/VC refusal, even though it has increased with age – a chance of refusal 1.14 times higher was found for the 55 - 64 age group and 1.10 times higher for the 65 - 74 and 75 - 84 age groups, compared to the youngest age group (18 - 44 years). As regards the referring hospitals, compared to the reference category HO_1, a lower chance of refusal was found in three hospitals and higher in the remaining. In case of a surgery ranked with a higher level of priority, a lower chance of refusal was found, when compared to normal priority. Patients waiting for conventional surgery had a 2.5 times greater chance of refusal

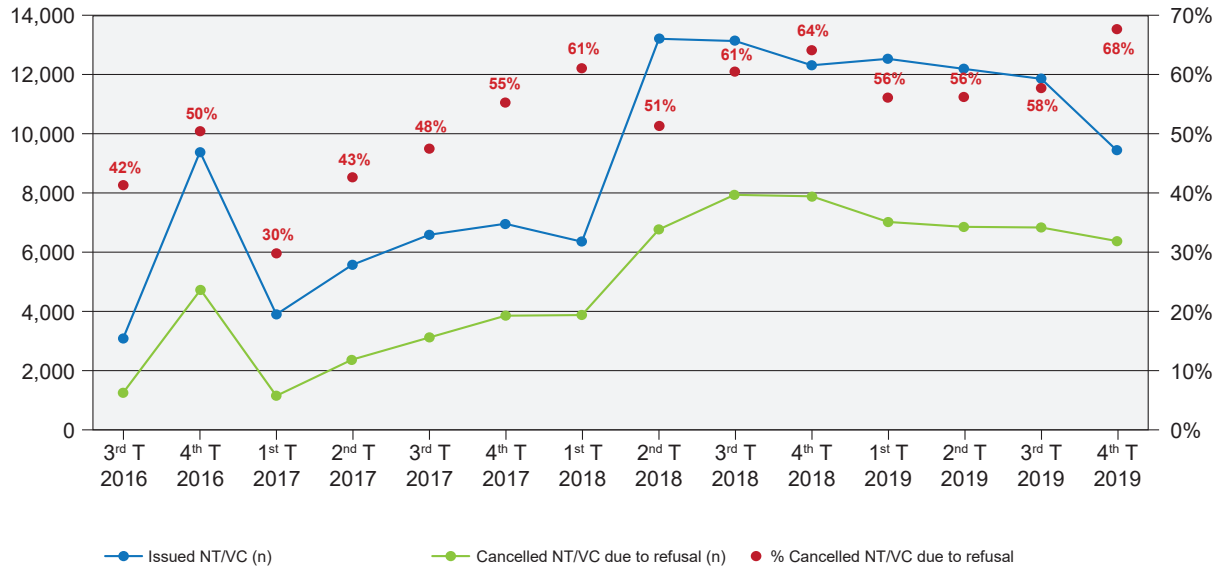

Figure 1 – Transfer notes (NT) and surgery vouchers (VC) that were issued and cancelled due to patient's refusal between 1 July 2016 and 31 December 2019 in the Central Region of Portugal

than patients waiting for outpatient surgery. Patients waiting for eye surgery corresponded to the group with the highest weight and showed a lower chance of refusal than patients waiting for general surgery. The results suggested a higher chance of refusal of patients waiting for orthopaedic surgery when compared to those waiting for general surgery. Finally, the chance of refusal was twice lower among users registered in 2018 or beyond, when compared to those who were registered before 2018.

DISCUSSION

TMRGs are used in Portugal, as in several other countries, to reduce waiting times for surgery. Whenever 50% of TMRG is reached a NT is issued and at 75% a VC is issued. However, the utilisation rate of NT/VC has been very low (around 20% within the 2014 – 2016 triennium).[22] It is worth mentioning that cancellations due to refusal of transfer were analysed in the study, even though other reasons must be considered (e.g., patient dropout, patients who already underwent surgery and administrative errors), leading to a higher number of cancellations than what has been shown in the results. TMRGs were updated in 2017, with effect from 1 January 2018. One of the objectives of this work was to analyse the evolution of NT/VC that were issued and refused from 2016 to 2019, to understand whether a change in behaviour is perceived after 2018. A significant increase in NT/VC issuance was found after 2018 and the rate of refusals remained unchanged at higher levels when compared with before. In any case, there was an upward trend in the rate of refusals even before the new TMRGs.

In July 2018, a *grupo técnico independente* - independent technical group (GTI) was implemented to assess the management systems of access to healthcare services within the NHS and described that a legal reduction in the TMRGs, without increasing the response capacity of the public institutions, would lead to an increase in the number of NT/VC with a small impact on the reduction of waiting lists due to the low utilisation rate.[22] Our results have confirmed an increasing number of NT/VC and the persistence of very high refusal rates. Some gaps to the whole NT/VC process have been described by the GTI report, including the lack of transparent information on the quality of performance outcomes of the hospital units (knowledge on the waiting times is not enough) and the information issues from providers or responsible entities to patients, including information on NT/VC. These were identified in the early years of the SIGLIC. A study including 570 telephone interviews[21] on the reasons for refusal within the first half of 2007 found that one of the reasons for refusal was precisely the lack of information (although it was the reason with the least expression). At the time of this article, NT/VC were redesigned, with improved information to support patients in their decision. Further studies may assess the impact on refusal rates.

Considering such a low utilisation of NT/VC, it is important to assess the risk factors associated with refusal and this is another objective of the present study. From our results, possible policy measures do not need to discriminate patients by gender as no differences were found in this regard. Younger people also seem to be less prone to refusal and therefore efforts to improve the use of NT/VC should focus on patients over 55. A specific attention should be given to patients waiting for conventional surgery and orthopaedic surgery, in whom the chance of refusal seems higher. The results suggested the presence of some significant differences. The commitment of not identifying the hospitals in

Table 2 – Analysis of the association between risk factors and refusal of NT/VC

Variable	Odds ratio	Confidence interval (95%)
Gender		
Male	1.017	0.966; 1.071
Age		
Age_45_54	1.036	0.941; 1.140
Age_55_64	1.136***	1.041; 1.240
Age_65_74	1.095**	1.005; 1.194
Age_75_84	1.098**	1.002; 1.203
IAge_85+	1.020	0.891; 1.168
Referring hospital		
HO_2	3.853***	3.610; 4.113
HO_3	0.654***	0.573; 0.746
HO_4	2.751***	3.383; 3.175
HO_5	0.706***	0.583; 0.853
HO_6	1.337***	1.092; 1.637
HO_7	3.600***	3.171; 4.087
HO_8	0.972	0.807; 1.171
HO_9	1.371***	1.266; 1.486
HO_others	0.007***	0.002; 0.027
Level of priority of surgery		
Priority surgery	0.638***	0.577; 0.706
Surgical modality		
Conventional	2.498***	2.343; 2.663
Surgical specialty		
Eye surgery	0.783***	0.714; 0.857
Orthopaedic	1.123***	1.037; 1.217
Others	0.732***	0.675; 0.794
Period post/pre TMRG redefinition		
Inclusion year	0.447***	0.400; 0.500

Note - reference categories: female gender; age_18_44; HO_1; Normal priority; Outpatient surgery; General surgery; registration on waiting list before 2018.
***: $p < 0.01$; **: $p < 0.05$; *: $p < 0.1$
Nagelkerke $R^2 = 0.206$

the study did not allow any recommendations in this regard.

Due to the nature of data, it is not possible to obtain the reasons for refusal. Data from over 10 years ago were used in the only study on this subject.[21] The main reason for refusing transfer was the preference for the medical team and hospital with which the patients already felt familiar, followed by patients' unwillingness to use the NT/VC within the validity period and reluctance to move away from their area of residence. Cross-checking this information with the characteristics of the patients/surgeries identified in our study may be useful in the design of measures to increase the effectiveness of the NT/VC, otherwise any expenditure with the whole process may have no return.

Limitations

This study fills a gap in literature, given the almost complete absence of analyses on the low utilisation of NT/VC. Two strengths of our study include the use of administrative data and a high number of observations. However, there are some limitations. It was assumed that NT/VC were issued whenever waiting times for surgery of 50% or beyond occurred. This may not be the case, as our sample may include episodes in which 'Refusal' variable takes the value zero, when in fact these observations should have been removed. On the other hand, the database of cancelled NT/VC includes refusals that occurred up to 31 December 2019 at the latest. Therefore, it is likely that some patients waiting for surgery on 31 December have refused a NT/VC beyond this date and were not included in our study. These two reasons may explain the discrepancy between the refusal rate that emerged from the regression analysis and the rates shown in Fig.1. Information regarding the association between refusal and the referring hospital is limited by the impossibility of revealing the identification of hospitals involved in the study. However, the analysis was developed and this relevant result should be considered in any case. Our results suggest that the chance of refusal was lower for LIC registrations from 2018 onwards, even though most patients on hold as of 31 December were registered beyond 2018 and those registered earlier may have already reached 50% of the TMRG in 2018. Therefore, this result should be considered with caution. Our data apply only to the Central Region of Portugal, so further studies will be required regarding the remaining regions of Portugal. The results of the regression analysis showed statistically significant differences between the model used in the study and the model with the constant only. However, a 71.3% rate of correctly predicted observations has been found and was significantly lower in the cases of refusal. On the other hand, information regarding the alternative reference hospitals offered to patients was unavailable from the data sources used in this study. This information is potentially relevant to obtain a more accurate assessment on the refusal decision, namely regarding the distance between the hospitals of destination and referral, which was already

identified in literature as having an impact on the choice of the hospital.[16] In fact, due to the nature of data, our analysis was restricted to the impact of administrative and management factors, keeping elements such as the patient's trust in the medical team and amenities of the selected hospital out of the analysis. Despite these limitations, it is our conviction that the results obtained are relevant and may be used for health policies on a persistent issue. It is also worth mentioning that, even based on administrative data, waiting times may be underestimated in the case that patients are not registered in the LIC at the date of the consultation in which the need for surgery was considered.[22]

CONCLUSION

Waiting times for surgery remain a policy concern in Portugal and in OECD countries, which is likely to worsen with cancellations due to COVID pandemic. It was confirmed in this study that the number of NT/VC has increased after the legal reduction of TMRGs in 2018 and that transfer refusal rates had already been on an upward trend from 2016 onwards and remained at a rate above 55% from the third quarter of 2018. A positive association with refusal was found with patient's age, conventional surgery (compared to outpatient) and orthopaedic surgery (compared to general surgery). Further studies are required in other regions of Portugal to assess the reasons for transfer refusal, aimed at the design of strategies to increase the utilisation rate of NT/VC and to reduce the current waste of resources with the thousands of NT/VC that subsequently come to be cancelled.

AUTHOR CONTRIBUTION

SC, CQ, PA: Study Conception, data analysis and interpretation, writing of the manuscript and approval of the submitted version.

HUMAN AND ANIMAL PROTECTION

The authors declare that this project complied with the regulations that were established by the Ethics and Clinical Research Committee, according to the 2013 update of the Helsinki Declaration of the World Medical Association.

DATA CONFIDENTIALITY

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

CONFLICTS OF INTEREST

The authors declare that there were no conflicts of interest in writing this manuscript.

FINANCIAL SUPPORT

The Centre for Business and Economics Research is supported by the Fundação para a Ciência e Tecnologia, I.P., Project UIDB/05037/2020.

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