Knowledge and Views of Common Citizens Regarding Ambulatory Surgery: A Pilot International Survey

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Abstract

Background and Aims: Ambulatory surgery (AS) has increased rapidly in most countries since the 1990's. There is an increasing effort by national healthcare systems to disseminate clinical information about this type of surgical environment to their populations. We conducted a public survey to understand what citizens think about AS and its organization in countries across the world.

Methods: This prospective observational study used a survey presented on a tablet computer. Subjects were asked about their surgical experience and those submitted to AS were asked about their satisfaction rate. Subjects were also asked if they associate AS to a surgical programme and the level of information obtained from their National Health Services.

Results: 400 citizens from 47 different countries were divided in six geographical areas, European (n=4, North, Central, East and South) and non-European (n=2, Developed and Non-Developed Countries / Emergent Economies). 51.0% reported they had heard of AS, and 29.3% had undergone an AS procedure. Those who had undergone AS, reported a high level of satisfaction with the procedure, with no differences in geographical areas (P=0.229). 90.5% would recommend AS to relatives and friends. Nevertheless, those interviewed wished to have more information related to AS from their National Health Authorities (NHA). This was significant in East, South-European, and Non-Developed Non-European countries (P<0.001).

Conclusion: The majority of the citizens relates AS as a surgical programme. Although more than 90% of all interviewed would recommend this surgical setting, all agree that more information related to AS should be available from their NHA.

Key words: Day Surgery; Ambulatory Surgery; Population Groups; Public Opinion; Patient Satisfaction.

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Introduction

Ambulatory surgery (AS) also known as day surgery or outpatient surgery has increased rapidly in the countries since the 1990s. AS accounts for more than 50% of all elective surgeries performed, particularly in North America, Europe and Oceania (1). The complexity of procedures performed on an outpatient basis continues to increase, with a wider range of patients and procedures now considered suitable for AS (2). It is estimated that approximately 75% of elective surgeries could be performed as AS (3). Therefore, it is necessary to increase awareness of this surgical setting with National Healthcare Services (NHS) promoting AS to the public (4-6). However, there is no data regarding public knowledge of AS. Similarly, common citizen views regarding AS have not been assessed. The aim of the present study was to survey the knowledge and views of subjects from multiple countries about AS.

Methods

This prospective observational study was based on a survey of tourists, older than 17 years of age, visiting to the city of Porto, Portugal. Porto was chosen because it receives over two million tourists a year from across the world. The survey was performed between November 2018 and February 2019 by an interviewer who was familiar with AS. For privacy reasons the survey was performed on a tablet computer using multilingual Google Forms (English, Chinese, Spanish, Portuguese, Russian, Turkish, French, German, Italian, Japanese, Polish, Swedish, Danish, Slovak), translated by natives-speakers. The first screen had information regarding AS (or alternative term day surgery), and the objective of this anonymous survey. In order to be able to proceed with the questionnaire subjects had to give their written informed consent throught an acceptance box. Ethical approval for this study (Ethical Committee P2020-CE-P03) was provided by the Ethical Committee of Centro Hospitalar Universitário do Porto (CHUP) / Instituto de Ciências Biomédicas Abel Salazar (ICBAS), Porto, Portugal, on 18 March 2019.

Anaesthesiologists who were familiar with AS developed the survey questions. We included demographic variables (age, gender, nationality and country of residence) but no other personal identifiable data were collected. Subjects were asked about their past surgical experience including the surgical setting (i.e., inpatient or AS), and those that were submitted to AS were asked about their satisfaction rate on a 10-point scale and the importance of different variables related to their satisfaction (Table 1). Subjects were also asked if they associate AS to a surgical programme and the relative importance of potential advantages of AS, such as easier scheduling and registration process (7,8), patient-centered care (friendlier) (9,10), less disruptive environment (less time spent in the facility) (8,11), reduced acquired hospitals infections (4,12,13), reduced rate of complications (thrombosis, obstipation, cognitive dysfunction, etc) (14-16), quicker functional recovery (4,17), and quicker return to social and professional life (4,17). Subjects were also asked about the availability of information related to AS activity by the Health Authority in their country. All these variables were quantified through a four level Likert-scale: 1 – not important at all; 2 – less important; 3 – important; 4 – very important. However, these questions had a no opinion option.

Table I Importance towards Patient satisfaction in ambulatory surgery, only interviewers submitted to a surgical procedure on ambulatory setting answered these questions (n=117).

	Total (n=117)	CE (n=33)	EE (n=9)	NE (n=14)	SE (n=35)	NED (n=14)	NEEE (n=12)	No Opinion
Surgery well done, without complications	4.00 [1-4] P=0.890	4.00 [2-4] (n=32)	4.00 [4-4] (n=9)	4.00 [3-4] (n=14)	4.00 [2-4] (n=35)	4.00 [1-4] (n=14)	4.00 [3-4] (*n*=12)	*n*=1 (0.9%)
Extensive information related to surgery	4.00 [2-4] P=0.848	4.00 [2-4] (n=30)	4.00 [3-4] (n=9)	3.50 [3-4] (n=14)	4.00 [2-4] (n=35)	4.00 [2-4] (n=13)	4.00 [2-4] (*n*=12)	*n*=4 (3.4%)
Painless surgical experience	4.00 [2-4] P=0.110	4.00 [2-4] (n=29)	4.00 [3-4] (n=8)	3.00 [2-4] (n=13)	4.00 [2-4] (n=35)	4.00 [3-4] (n=14)	3.50 [3-4] (*n*=12)	*n*=6 (5.1%)
Free nausea and vomiting surgical experience	3.00 [1-4] P=0.682	4.00 [2-4] (n=27)	4.00 [3-4] (n=8)	3.00 [2-4] (n=14)	3.00 [2-4] (n=29)	3.00 [1-4] (n=13)	3.00 [2-4] (*n*=10)	*n*=18 (15.4%)
Careful and personalised treatment	4.00 [2-4] P=0.520	4.00 [2-4] (n=31)	4.00 [3-4] (n=9)	4.00 [3-4] (n=13)	4.00 [2-4] (n=34)	4.00 [3-4] (n=14)	4.00 [3-4] (*n*=12)	*n*=4 (3.4%)
Privacy and anonymously treatment	3.00 [1-4] P=0.236	3.00 [2-4] (n=28)	4.00 [3-4] (n=7)	3.00 [2-4] (n=10)	4.00 [1-4] (n=33)	3.50 [2-4] (n=12)	3.00 [2-4] (*n*=9)	*n*=18 (15.4%)
Clean and modern facilities	4.00 [2-4] P=0.0090	4.00 [2-4] (n=31)	4.00 [3-4] (n=8)	3.50 [3-4] (n=14)	4.00 [2-4] (n=35)	4.00 [3-4] (n=14)	4.00 [3-4] (*n*=12)	*n*=3 (2 .6%)

CE – Centre Europe, EE – East Europe, NE – North Europe, SE – South Europe, NED – Non-European Developed, NEEE – Non-European Emerging Economies. 1 – not important at all; 2 – less important; 3 – important; 4 – very important. Data are median (minimum - maximum).

Data were processed in Microsoft Excel and analysed in IBM – SPSS® for Windows (version 25.0). For analysis purposes we divided the questionnaires obtained in six geographical areas (see Table 2): four European (North, Centre, East and South) and two non-European (Developed and Non-Developed Countries / Emerging Economies). As people are likely to know and use the NHS of the country where they live, the division of the results was based on the country of residence for the last 5 years. Data are n (%), mean ± SD or median (minimum - maximum). Demographic variables, patient satisfaction factors and level of information were identified with descriptive statistical analysis. Non-parametric Kruskal-Wallis test and $X2$ independent test were used to compare data distribution between groups. Internal consistency was analysed with Alpha-Cronbach. Differences were considered significant when $P<0.05$.

This manuscript adheres to the applicable Strobe guidelines.

Results

Four hundred citizens from 47 countries agreed to participate in this survey, there were no dropouts. The subjects were divided into four age groups: 36.75% between 18-29 years, 29.0% between 30-44 years, 25.0% between 45-59 years, and 9.25% older than 60 years. Female subjects represented 60.5%, noting that three citizens (0.75%) opted to register themselves as "other gender". Table 2 presents the subjects in the various geographical areas described above. We found no differences between geographical areas in relation to the gender (P=0.568). The age of subjects interviewed from Northern Europe (NE) were older (14 out of 26 were older than 44 years old) and those from Eastern Europe (EE) were younger (17 out of 33 were younger than 30 years old), than in other groups (P=0.011).

Due to the lower representation from Nordic countries (Norway, Sweden, Finland and Denmark) we included residents from United Kingdom and Ireland in this group because of their geographical proximity and because these countries have similar national expression of AS practice (5), entitled this as NE. There is significant heterogeneity in the group Non-European Emergent Economies (NEEE) with countries showing different social and economical development and where some emergent economies like Brazil and China are awakening for this surgical practice.

Two hundred and fifteen subjects (53.8%) had a previous surgical experience, 117 (29.3%) of them had undergone surgery on an AS basis, with those from NE and Non-European Developed (NED) countries reporting highest percentages (Figure 1) without any differences among the geographical areas (P=0.422).

The questionnaire had a good internal consistency with an Alpha-Cronbach of 0.870, considering the 15 Likert opinion questions.

High satisfaction scores with a median score of 9 [8.5 – 10] without differences between geographical areas (P=0.229), were found in subjects who had AS experience.

Table 2 Residence countries of the interviewed citizens.

Geographical Area	N (%)	Country	N (%)
South Europe (SE)	136 (34.00%)	Spain	71 (52.20%)
		Portugal	41 (30.15%)
		Italy	24 (17.65%)
Centre Europe (CE)	108 (27.00%)	Germany	41 (37.96%)
		France	36 (33.34%)
		Switzerland	11 (10.19%)
		Belgium	7 (6.48%)
		The Netherlands	7 (6.48%)
		Luxembourg	4 (3.70%)
		Austria	2 (1.85%)
Non-European Developed Countries (NED)	53 (13.25%)	United States America	12 (22.64%)
		South Korea	12 (22.64%)
		Canada	9 (16.98%)
		Israel	5 (9.43%)
		Japan	4 (7.55%)
		Singapore	4 (7.55%)
		Taiwan	4 (7.55%)
		Australia	2 (3.77%)
		United Arab Emirates	1 (1.89%)
Non-European Non-Developed Countries / Emergent Economies (NEEE)	44 (11.00%)	Brazil	26 (59.09%)
		China	6 (13.64%)
		Argentina	2 (4.55%)
		Venezuela	2 (4.55%)
		Thailand	2 (4.55%)
		Philippines	1 (2.27%)
		India	1 (2.27%)
		Mexico	1 (2.27%)
		Peru	1 (2.27%)
		Turkey	1 (2.27%)
		South Africa	1 (2.27%)
East Europe (EE)	33 (8.25%)	Poland	7 (21.21%)
		Czech Republic	7 (21.21%)
		Russia	4 (12.13%)
		Lithuania	3 (9.09%)
		Hungary	2 (6.06%)
		Macedonia	2 (6.06%)
		Romania	2 (6.06%)
		Serbia	2 (6.06%)
		Croatia	1 (3.03%)
		Slovakia	1 (3.03%)
		Moldova	1 (3.03%)
		Ukraine	1 (3.03%)
North Europe (NE)	26 (6.50%)	United Kingdom	17 (65.38%)
		Denmark	3 (11.54%)
		Norway	3 (11.54%)
		Sweden	2 (7.69%)
		Ireland	1 (3.85%)

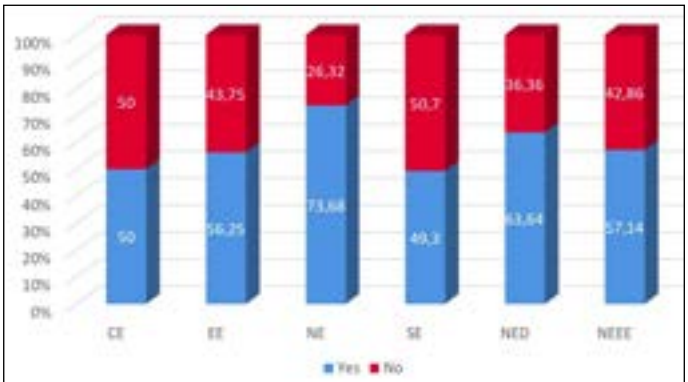

Figure 1 Percentage of interviewed citizens submitted to ambulatory surgery.
CE – Centre Europe, EE – East Europe, NE – North Europe, SE – South Europe, NED – Non-European Developed, NEEE – Non-European Emerging Economies.

In relation to the relative importance of different variables related to patient satisfaction, although there is no difference amongst groups (Table 1), overall subjects identified free nausea and voming surgical experience and privacy and anonymously treatment, as not so important.

Heterogeneity between groups was observed when we asked subjects if they associate AS to a surgical programme (P=0.001), being Centre Europe (CE) (64.8%) and Southern Europe (SE) (55.2%) the groups that the majority of subjects confirmed that knowledge (Figure 2).

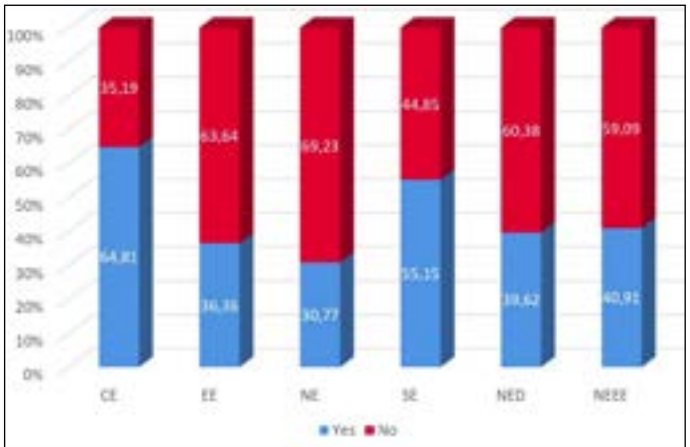

Figure 2 Percentage of interviewed citizens that associates ambulatory surgery to a surgical programme.
CE – Centre Europe, EE – East Europe, NE – North Europe, SE – South Europe, NED – Non-European Developed, NEEE – Non-European Emerging Economies.

All subjects were asked to give their opinion about different variables related to AS advantages. There was no difference among geographical areas. However, overall subjects score less importance to less disruptive environment or to an easier scheduling and registration process in comparison with other aspects (Table 3).

90.5% (n=362) of those interviewed would recommend AS to relatives or friends, and with no difference between groups (P=0.102), with a minimum of 83% (n=44) for those representing NED countries and a maximum of 97% (n=32) for EE countries. Reasons for recommendation where related to faster process (54.7%), a safer regimen (39%) or an easier surgical programme (34.3%). Unsafe (25%), less supportive (25%) or less quality (15.6%), where reasons stated by those who would not recommend AS to relatives or friends.

Level of information about AS programmes available from Health Authorities was heteregeneous between groups (P<0.001), noting that 3 of the 6 groups (Figure 3) refer insufficient level of information (SE, EE and NEEE countries).

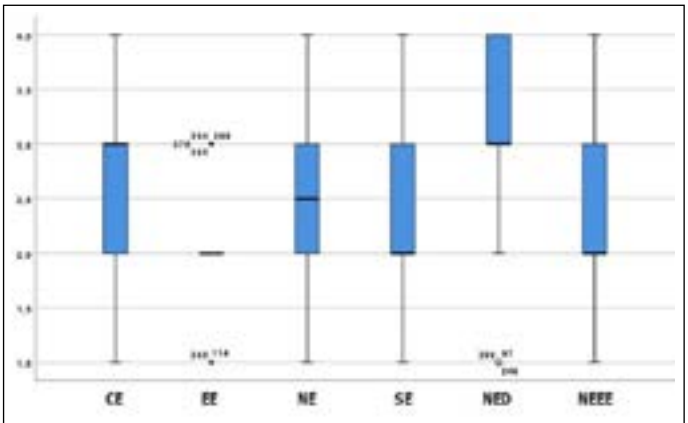

Figure 3 Box-plot of the level of information related to ambulatory surgery available from the Health Authorities per geographical area.
CE – Centre Europe, EE – East Europe, NE – North Europe, SE – South Europe, NED – Non-European Developed, NEEE – Non-European Emerging Economies
1 – Non-existent; 2 – Insufficient; 3 – Sufficient; 4 – Very Good.

Discussion

Information of the level of knowledge and thoughts related to AS on common citizens are lacking. Given the diversity of countries included in our survey, we divided our sample in six groups according to their geographical position for European countries and their economical development for non-European countries.

NE had the higher number reporting AS experience, but the lowest median satisfaction. Being NE an older age group composed by people from countries where AS is a tradition, we would expect greater satisfaction scores (18-20).

NE group reported pain as a less relevant factor for satisfaction with AS than other groups, in spite of being the older participants. In fact, LD Wandner et al. found that typical older adults are more pain sensitive and willing to report pain than both typical middle-age adult and typical young adult (21).

Surprisingly, in addition to having a not so important score, free nausea and vomiting surgical experience had a higher percentage (15.4%) of no opinion, which could show an overall indifference regarding this aspect. In contrast to what was found by TJ Gan about the expressive value that patients are willing to pay for a completely effective antiemetic (22).

Privacy and anonymously treatment was similarly considered overall a not so important aspect related to AS, also reflected by the higher percentage of no opinion responders (15.4%). Amongst other factors, D Fenton-Lee at al. reported that there was a high level of patient satisfaction with day surgery when there was ward privacy (23). This might be cultural, as although without significant difference, SE and EE groups scored higher than other groups, noting that subjects from these countries give more importance to this aspect.

In spite of the spread of AS over the World only in two groups (CE and SE) the majority of participants confirmed to associate AS with a surgical programme. In opposition, only one third of NE and NED groups reported to have heard AS as a surgical programme. In fact, two thirds of these respondents live in the United Kingdom, United States of America, Canada, Denmark, Norway, Sweden and Australia where AS represent more the majority of all elective cases. For that reason, we would expect different results and that more participants with residence in those countries would already have heard about this surgical setting. Moreover, being NE group an older age group (more than 50% over 44 years old), eventually exposed to more surgical procedures and more healthcare information, we would

Table 3 Perspective of interviewed citizen in relation to the advantages of Ambulatory Surgery (n=400).

	Total (n=400)	CE (n=108)	EE (n=33)	NE (n=26)	SE (n=136)	NED (n=53)	NEEE (n=44)	No Opinion
Patient is the centre of treatment by health professionals	4.00 [1-4] P=0.387	3.00 [1-4] (n=90)	4.00 [3-4] (n=24)	4.00 [3-4] (n=18)	4.00 [1-4] (n=128)	4.00 [2-4] (n=45)	4.00 [2-4] (n=41)	n=54 (13.5%)
Less disruptive environment (less time spent in the facility)	3.00 [1-4] P=0.254	3.00 [2-4] (n=91)	3.00 [2-4] (n=27)	3.00 [2-4] (n=20)	3.00 [1-4] (n=123)	3.00 [2-4] (n=48)	4.00 [2-4] (n=39)	n=52 (13.0%)
Reduced patient acquired hospital infections	4.00 [1-4] P=0.254	4.00 [2-4] (n=96)	4.00 [3-4] (n=26)	4.00 [3-4] (n=18)	4.00 [1-4] (n=123)	4.00 [2-4] (n=49)	4.00 [1-4] (n=39)	n=49 (11.3%)
Reduced rate of complications (thrombosis, obstipation, cognitive dysfunction, etc)	4.00 [1-4] P=0.331	4.00 [2-4] (n=86)	4.00 [3-4] (n=27)	3.00 [3-4] (n=19)	4.00 [1-4] (n=123)	4.00 [2-4] (n=47)	4.00 [1-4] (n=37)	n=61 (15.3%)
Higher patient satisfaction rate (personalised treatment)	4.00 [1-4] P=0.390	3.00 [1-4] (n=88)	4.00 [2-4] (n=24)	3.00 [2-4] (n=20)	4.00 [1-4] (n=97)	4.00 [2-4] (n=45)	4.00 [2-4] (n=38)	n=88 (22.0%)
Easier scheduling and registration process	3.00 [1-4] P=0.239	3.00 [1-4] (n=80)	3.00 [2-4] (n=25)	3.00 [2-4] (n=19)	4.00 [1-4] (n=114)	3.00 [1-4] (n=44)	4.00 [2-4] (n=36)	n=82 (20.5%)
Quicker functional recovery	4.00 [1-4] P=0.180	4.00 [2-4] (n=92)	4.00 [3-4] (n=26)	3.00 [2-4] (n=19)	4.00 [1-4] (n=119)	4.00 [1-4] (n=47)	4.00 [3-4] (n=39)	n=58 (14.5%)
Sooner return to social and professional life	4.00 [1-4] P=0.091	4.00 [2-4] (n=88)	4.00 [3-4] (n=27)	3.00 [1-4] (n=22)	4.00 [1-4] (n=119)	4.00 [1-4] (n=46)	4.00 [3-4] (n=39)	n=59 (14.8%)

CE – Centre Europe, EE – East Europe, NE – North Europe, SE – South Europe, NED – Non-European Developed, NEEE – Non-European Emerging Economies. 1 – not important at all; 2 – less important; 3 – important; 4 – very important. Data are median (minimum - maximum).

expect different results. On the other hand, the EE group, being the younger group (more than 50% younger than 30 years old), are more confident in recommending AS to relatives and friends, although referring the lowest level of information to AS activity available from Health Authorities.

Subjects score less importance to less disruptive environment or to an easier scheduling and registration process in comparison with other aspects. It seems that the society when approaching health systems attributes less importance to administrative or social issues than to safety or clinical aspects. This can be reinforced by the percentage of no opinion answers (20.5%) on the advantage of the easier scheduling and registration process associated to AS.

Worth to note is the high percentage of no opinion regarding patient satisfaction rate / personalised treatment. This can be a reflection of lack of knowledge about a surgical process (only 215 patients had a surgical experience).

It would appear that, AS has an excellent image across the World be that for speed, safety or process facility, reinforced by more than 90% of participants who would recommend this surgical regimen to relatives and friends. Several papers state that it is possible to undertake most surgeries in adults and children as day cases (2,3). Indeed "AS should be considered the default for many elective surgical procedures" is the first statement in the joint 2016 statement from the Royal College of Anaesthetists and the Royal College of Surgeons of England (4).

Finally, there is a large consensus that more information related to this type of surgical programmes should be available from National Health Authorities even in those countries where AS has a high practice (24,25).

This study has some limitations due to the fact that only travelling citizens were selected. It is likely that this selects people with higher income and higher education attainment and so eventually better information in relation to their fellow citizens. This might skew the results obtained preventing a true representation from each country. In addition, the questionnaire was developed for this study and not previously validated in the AS context or in the language context. Being the target population very heterogeneous and internationally multicultural, the validation of the questionnaire would be an extremely complicated task even just for the AS context. Nevertheless, the authors developed the questions based on simple concepts aasociated with AS for the last 40 years, that can be considered a classic for the AS health literacy. The next step in our research in this field would be to increase the sample size with citizens living in countries where there is no great representation and avoid differences in demographic variables that might have interfered with the results.

Conclusion

In conclusion, the results of our study show that subjects submitted to AS were overall satisfied with their AS experience and the great majority of all interviewed would recommend it to their relatives and friends in spite of asking for more information to be available regarding its organization even in countries where AS represent the majority of surgical cases.

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