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Use of visual aids in general practice consultations: A questionnaire-based survey

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ABSTRACT

Objectives: Visual aids (VAs) seem effective to improve doctor-patient communication. The objective was to describe how VAs are used in consultation and what French general practitioners (GPs) expect of them.
Methods: Cross-sectional study using a self-administered questionnaire among French GPs in 2019. Descriptive and multinominal logistic regression analyses were performed.
Results: Of the 376 respondents, 70% used VAs at least weekly and 34% daily; 94% considered VAs useful/very useful; 77% felt they did not use VAs enough. Sketches were the most used VAs and considered the most useful. Younger age was significantly associated with a higher rate of use of simple digital images. VAs were mainly used to describe anatomy and facilitate patient comprehension. Main reasons for not using VAs more often were time spent searching, lack of habit and poor quality of available VAs. Many GPs requested a database of good quality VAs.
Conclusions: GPs use VAs regularly in consultations but would like to use them more often. Informing GPs of the usefulness of VAs, training them to draw adapted sketches and creating a good quality databank are some possible strategies to increase the use of VAs.
Innovation: This study described in detail the use of VAs as tool for doctor-patient communication.

1. Introduction

1.1. Context

Good doctor-patient communication enables shared decision making and therapeutic education, which are two concepts promoted by many countries [1]. It also helps to improve health parameters [2,3], particularly in the context of individual education in general practice [4]. However, improvement needs to be made in terms of communication: much of the information delivered by doctors is not understood or retained by their patients [5], and patients feel that information sharing is insufficient [6]. In particular, there are significant inequalities in access to medical information depending on patients' health literacy levels. Fighting against these inequalities is currently one of the priorities of the High Council for Public Health to improve overall health in France [7].

Visual aids (VAs) are theoretically an ideal way to support medical communication. Research in education has shown that memory processing involves hearing in 11% of cases and vision in 83% of cases. Sixty percent of the population has a dominant visual memory [8].

According to the medical literature, VAs are popular with patients [9-11]. They have been shown to have a positive impact on information recall, comprehension, attention, adherence, and patient satisfaction, in particular for patients with low health literacy [12-33]. Effectiveness has been shown for media that can be used outside consultation and navigated by patients on their own (stand-alone VAs) such as illustrated written information [12,21-24], illustrated prescriptions or medication leaflets [13,25,26], and digital VAs [27-33]. In other cases, the effectiveness of VAs is more controversial [34-41].

Patient information tools are more effective if they are used during consultation and in the context of a caregiver-patient encounter [42,43]. General practice consultation is a privileged and effective place for individual health education for all types of patients [4,44]. Only two studies were found on the use of VAs in general practitioners (GPs)' consultations and they are discordant. On the one hand, a Swiss study reported that VAs

Abbreviations: VA, visual aid; GP, general practitioner.

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were used to describe cardiovascular risk assessment in only 16% of the 70 consultations studied [45]. On the other hand, a medical thesis found that 62% of 117 GPs surveyed reported using VAs during their consultations in 2018. However, this study had several biases and this finding was a secondary outcome [46]. We found no studies exploring the opinion of GPs in France on the use of VAs and their perceived usefulness. Factors that may influence the use of VAs are not known. In the context of the controversy over the effectiveness of VAs [34-41], it is important to know the opinion of GPs on their usefulness. Therefore, it seemed necessary to carry out this study.

We will use the term visual aid (VA) to refer to any communication tool that can be used in a consultation that relies mainly on the sense of sight (image, video, sketch, anatomical model, etc.).

1.2. Objectives

The main objective was to collect quantitative data on the use of VAs by French GPs in consultations with respect to their sociodemographic characteristics, the quality of the computer equipment in their workplace and the health literacy level of their registered patients.

The secondary objective was to propose possible strategies to increase the use of VAs based on GPs' expectations of them and perceptions of their usefulness.

2. Methods

2.1. Study design

This national cross-sectional study was conducted between March and April 2019 using online self-administered questionnaires. Data were reported in accordance with the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) criteria.

2.2. Inclusion and exclusion criteria

French physicians practicing in general practice (target population) were included. Questionnaires with no response to the questions of interest (except for respondents' characteristics) and duplicates (same respondents' characteristics) were excluded.

2.3. Recruitment

A survey invitation was sent to the mailing lists of departmental delegations of the French Medical Council willing to participate and the Department of General Practice at University Paris-Est Créteil. GPs were free to answer or not, and no incentives were provided. Respondents were able to review and change their answers before submission. Physicians meeting the inclusion criteria were identified with the first question of the survey.

2.4. Gathered data

The questionnaire was created on the secure and independent online survey platform Eval&Go. It was produced and reviewed by 3 academic GPs based on their experience and the collected literature. The questionnaire was divided into 5 parts and included 19 questions.

2.4.1. Respondents' characteristics

Information was gathered on respondents' age, gender, training supervisor status, perceived speed of hardware used (5-point Likert scale), perceived knowledge of literature data about VAs (5-point Likert scale), and perceived literacy of registered patients.

No criteria were found in the current literature to easily measure the literacy of registered patients. This data was estimated by 2 questions: subjective opinion of the respondent on the percentage of low-literacy patients and address of the respondent. Responses to the latter question were crossed with data from the French National Institute of Statistics and Economic Studies (INSEE) [47] to determine the level of education in the territory of practice, a factor strongly correlated with literacy [48]. These two indicators were coherent with posterior probability (*Pearson's correlation coefficient*, Rho = 0.308). GPs who had registered patients with lower literacy were identified with at least one of these indicators.

2.4.2. Exploration of the rate of use of VAs during consultation

Six questions and a free comment explored the rate of use of different types of VAs (hand-drawn sketch, anatomical model, wall poster, printed image, simple digital image, video, interactive digital support, illustrated medication instructions), as well as sources, purposes, communicational objectives, quality, and impediments to their use. The time scale was divided into “never”, “yearly”, “monthly”, “weekly”, and “daily” since this scale had been previously used in a general practice study [49]. The highest rate mentioned in each questionnaire was used to estimate the rate of use of any type of VA.

2.4.3. Exploration of GPs' expectations about VAs during consultation

Three questions and one free comment explored the quality of VAs used, expected objectives of VAs used and perceived usefulness of different types of VAs (5-point Likert scale).

2.5. Analyses

Categorical variables were presented as numbers and percentages, and numeric variables as means (standard deviation) or medians (interquartile range) depending on their distribution.

Univariate comparison analyses studied the relationship between age and gender of the respondent, training supervisor status, perceived speed of hardware, perceived knowledge about VAs, educational level of inhabitants in the territory of practice, and rate of use of different types of VAs. For a more precise odds ratio calculation, univariate analyses were performed by grouping Likert scale questions in 2 classes (the 2 inferior items were compared to the 3 superior items). The usual comparison tests were performed, with the Pearson's chi-squared test (or *Fisher's exact test* in case of small sample size) for categorical variables.

Univariate analyses with multinomial logistic regressions were conducted for categorical variables with more than 2 categories to identify potential confounders. One was performed between the variable “rate of use of simple digital images” (with 5 classes) and potential confounders (age and gender). Another was performed between the variable “the rate of use of any VAs” (with 5 classes) and potential confounders (age and gender). Reference groups were set as “Never” for the rate of use of simple digital images and “Yearly” for the rate of use of any VAs. Associations were estimated with univariate odds ratios and their 95% confidence interval. Multivariate modelling was then performed, adjusting for all identified confounders (both age and gender).

All tests were two-tailed. *Statistical* significance for *all analyses was* set at $p < 0.05$. All statistical analyses were performed using GMRC Shiny stats and STATA SE15.0 (College Station, TX, USA).

3. Results

3.1. Respondents' characteristics

Of the 5373 questionnaires sent, 376 were analysed (Fig. 1). The response rate was 7% in 2 months. The mean rate of completion of the 376 analysed questionnaires was 90%. *The average time* to complete the *survey* was 12 min. Respondents were GPs from all metropolitan French regions and overseas. Median age was 40 (33–53). Sex ratio was 0.69. Regarding the literature data on VAs presented to GPs, 64% of the respondents said they were not aware of them at all. All respondent characteristics are reported in Table 1.

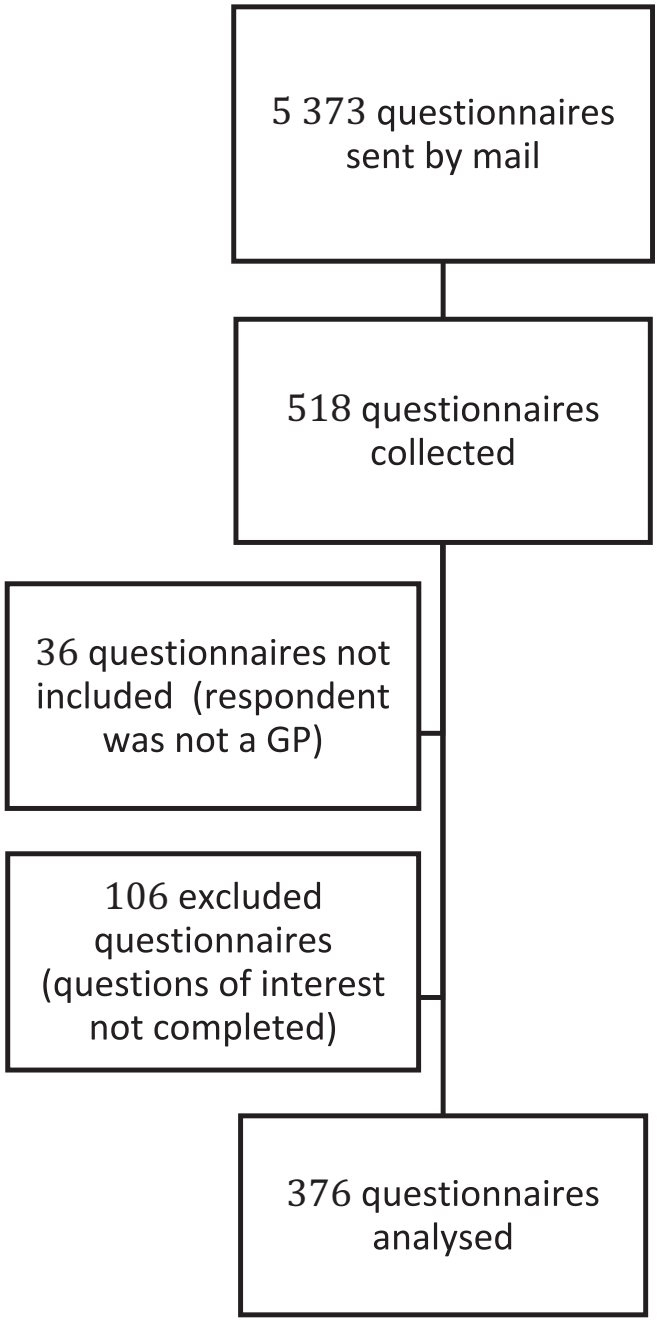

Fig. 1. Flow chart.

3.2. Use of VAs during general practice consultation

The results present all univariate analyses, as well as the multivariate analysis, considering the confounding factors: age and gender were associated with the use of simple digital images and any type of VAs.

3.2.1. Rate of average use of different types of VAs by GPs during consultation

The proportion of at least weekly use of VAs was estimated to be 71% (95% CI = 66–76), with 34% (95% CI = 29–39) of respondents reporting daily use (Table 2). Sketches were the most used VA, used at least weekly by 46% (95% CI = 41–51) of the respondents and daily by 16% (95% CI = 12–19). Printed images and simple digital images were used at least monthly by 52% (95% CI = 47–57) and 51% (95% CI = 46–56) of the respondents respectively. Other types of VA were mostly not used by GPs in the sample: 50% (95% CI = 45–55) never used anatomical models, 57% (95% CI = 52–62) wall posters, 72% (95% CI = 68–77) videos, 78% (95% CI = 73–82) interactive digital supports and 85% (95% CI = 81–89) illustrated medication instructions. The use of real objects, such as an intrauterine device or a packet of birth control pills, was reported in the free comment section.

Table 1
Respondents' characteristics (n = 376).

Age (years), median [interquartile range]	40 [33–53]
Gender, n (%)	
Male	154 (41)
Female	222 (59)
Training supervisors, n (%)	147 (39)
Perceived speed of hardware in the practice (computers and Internet connection), n (%)	
Very poor	7 (1.9)
Poor	22 (5.9)
Average	92 (25)
Good	173 (46)
Very good	82 (22)
Estimated proportion of registered patients with lower literacy (n = 360), median (%) [interquartile range]	25 [15–40]
Proportion of inhabitants with lower levels of education in the territory of practice[1] (n = 253), median (%) [interquartile range]	29 [24–37]
Awareness of the presented data from the literature on VAs' usefulness (n = 357), n (%)	
Fully unaware	229 (64)
Somewhat unaware	59 (17)
Neither aware nor unaware	45 (13)
Somewhat aware	21 (5.9)
Fully aware	3 (0.8)

[1] According to the 2015 data of the French National Institute of Statistics and Economic Studies (INSEE).

Younger age was independently associated with a higher rate of use of any VAs (p = 0.012), and especially with simple digital images (p = 0.001). Gender did not influence the rate of use of VAs in multivariate analysis. Training supervisors' status or perceived speed of hardware did not influence the use of VAs. Respondents with low-literacy patients used sketches more often (p = 0.007) and less simple digital images (p = 0.04).

3.2.2. Main sources of VAs used

Half of GPs mainly used VAs from unknown sources (for instance images found on Google Images). Some GPs also reported that they created their own VAs if needed, without specifying in the questionnaire what type of VAs they created (they may have taken the pictures or made the videos they needed or drawn sketches, etc.). Nearly half of the GPs reported using VAs they created themselves, at 42% (95% CI = 37–47). The main sources of VAs respondents mentioned were a public institution at 35% (95% CI = 30–40), a scientific society at 31% (95% CI = 27–36) or a *pharmaceutical industry* at 10% (95% CI = 7.3–13).

3.2.3. Main uses of VAs

VAs were mainly used to describe anatomy (79%, 95% CI = 75–83, at least monthly use) or to explain the pathophysiology of disease (52%, 95% CI = 47–57, at least monthly use) (Table 2).

GPs made little use of VAs in several of the listed situations. VAs were used less than once a month to help shared decision making by 58% (95% CI = 53–63) of GPs, to explain a treatment or examination procedure carried out by patients themselves by 64% (95% CI = 59–69), to explain treatment or examination procedures that the patient was going to undergo by 73% (95% CI = 69–78), to explain drug action by 76% (95% CI = 72–80), and to explore emotions and provide psychotherapy by 92% (95% CI = 89–95).

3.2.4. Communicational purpose of using VAs

On the one hand, the main reason GPs used VAs during consultation was to facilitate comprehension of information: 61% (95% CI = 56–66) of the respondents reported using them at least weekly for this purpose (Table 2). On the other hand, structuring consultations to not forget

Table 2
Use of VAs.

	Never n (%)	Yearly n (%)	Monthly n (%)	Weekly n (%)	Daily n (%)	Comparison with age		Comparison with gender		Comparison with perceived literacy of registered patients		Comparison with educational level of registered patients	
						p	Reference group	p	Reference group	p	Reference group	p	Reference group
Type of VA used (*n* = 370)													
Sketch	18 (4.9)	75 (20)	107 (29)	112 (30)	58 (16)	0.39*		0.22*		0.65**		0.20*	
Anatomical model	184 (50)	71 (19)	57 (15)	43 (12)	15 (4.1)	<0.01*	Older	0.18*		0.56**		0.18**	
Wall poster	210 (57)	71 (19)	50 (14)	26 (7)	13 (3.5)	0.10*		0.65*		0.12*		0.84**	
Printed image of a fact sheet, booklet, book…	90 (24)	89 (24)	114 (31)	62 (17)	15 (4.1)	0.87*		0.04*	Male	0.02*	Low literacy		
Simple digital image	103 (28)	78 (21)	95 (26)	67 (18)	27 (7.3)	0.001***	Younger	<0.001***	Male	0.31*		0.02*	High level
Video	268 (72)	61 (17)	28 (7.6)	10 (2.7)	3 (0.8)	0.64**		0.11**		0.65*		0.05**	
Interactive digital support	287 (78)	36 (9.7)	25 (6.8)	16 (4.3)	6 (1.6)	0.64**		0.06**		0.97*		0.02**	High level
Illustrated medication instructions	314 (85)	32 (8.7)	7 (1.9)	12 (3.2)	5 (1.4)	0.93**		0.71**		0.08*		0.43**	
Any VAs [1]	0 (0)	22 (5.9)	86 (23)	137 (37)	126 (34)	0.012***	Older	0.363***		0.18*		0.57*	
Main uses of VAs (*n* = 371)													
To describe anatomy	10 (2.7)	67 (18)	123 (33)	120 (32)	51 (14)	0.09**		<0.01*	Male	0.24**		0.01**	High level
To explain pathophysiology of disease	72 (19)	105 (28)	112 (30)	63 (17)	19 (5.1)	0.54*		<0.01*	Male	0.75*		0.62*	
To explain drug action	176 (47)	105 (28)	60 (16)	24 (6.5)	6 (1.6)	0.45**		0.78**		0.53**		0.51**	
To describe proceedings of a treatment or an exam the patient will undertake him- or herself	129 (35)	110 (30)	83 (22)	36 (9.7)	13 (3.5)	0.14*		0.02*	Male	0.05*		0.58**	
To describe proceedings of a treatment or an exam the patient will undergo	150 (40)	121 (33)	66 (18)	31 (8.4)	3 (0.8)	0.04**	Older	0.02**	Male	0.3**		0.58**	
To help shared decision making	121 (33)	94 (25)	94 (25)	47 (13)	15 (4)	0.28*		0.61*		0.18*		0.24**	
To explore emotions, to provide psychotherapy	302 (81)	40 (11)	17 (4.6)	8 (2.2)	4 (1.1)	0.46**		0.59**		0.24**		0.52**	
Communicational purposes of using VAs (n = 371)													
To facilitate comprehension of information	4 (1.1)	41 (11)	101 (27)	125 (34)	100 (27)	0.03**	Younger	0.03**	Male	0.34**		0.07**	
To improve recall of information	60 (16)	80 (22)	95 (26)	92 (25)	43 (12)	0.41*		0.15*		0.1*		0.08*	
To get patient's attention	82 (22)	77 (21)	91 (25)	82 (22)	39 (11)	0.41		<0.01*	Male	0.16*		0.17*	
To persuade the patient, to improve compliance	62 (17)	76 (21)	92 (25)	93 (25)	48 (13)	0.07*		0.01*	Male	0.05*		0.05*	
To explain quicker	98 (26)	67 (18)	86 (23)	70 (19)	50 (14)	0.02*	Older	0.01*	Male	0.56*		0.72*	
To structure consultation to not forget important elements	199 (54)	73 (20)	50 (14)	32 (8.6)	17 (4.6)	0.03*	Older	0.43*		0.18*		0.69**	

[1] Estimated data, *chi-square test, ** Fisher's exact test, *** multivariable multinomial logistic regression with Wald test.

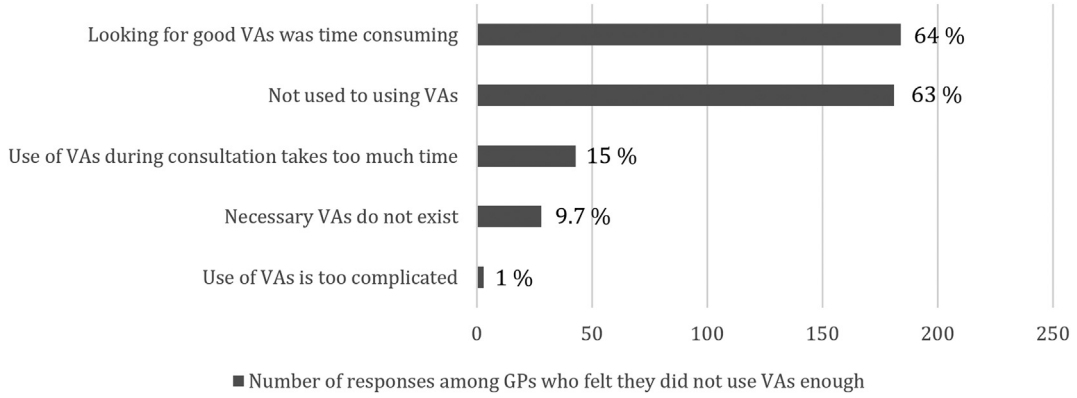

Fig. 2. Reasons not to use visual aids more often.

important elements was the rarest objective with 74% (95% CI = 69–79) of respondents reporting using VAs less than monthly for this purpose. Objectives such as improving recall of information, getting the patient's attention, persuading the patient or improving compliance, and explaining quicker were heterogeneously cited; about 60% (95% CI = 55–65) of the GPs had these objectives monthly.

3.2.5. Respondents felt they used VAs enough

Of the respondents, 88 (23%, 95% CI = 19–28) felt they used VAs enough, as opposed to 288 (77%, 95% CI = 72–81) who felt they didn't use VAs enough.

GPs with low-literacy patients were more likely to report feeling that they didn't use VAs enough ($p = 0.01$).

3.2.6. Reasons not to use VAs more often among GPs who felt they did not use them enough

Most of the respondents who felt they didn't use VAs enough mentioned 2 reasons. Looking for good VAs was time-consuming for 64% (95% CI = 58–69), and 63% (95% CI = 57–68) said they were not familiar with using them more often (Fig. 2). Other listed reasons were heterogeneous: the use during consultation was taking too much time for 15% (95% CI = 11–19) of the GPs, necessary VAs did not exist for 10% (95% CI = 6.3–13) and their use was too complicated for 1% (95% CI = 0.0–2,2).

In the free comment section, being unable to draw was mentioned 5 times. Two respondents evoked the high cost of anatomical models. Inappropriate organisation of the desk to use VAs was also mentioned.

GPs with low-literacy patients or using VAs daily more often believed necessary VAs did not exist ($p = 0.03$ and $p = 0.01$ respectively).

3.2.7. Perceived quality of VAs used

VAs used were considered in accordance with the latest evidence-based practice by 55% (95% CI = 50–60) of the respondents and easily understandable by patients by 53%, (95% CI = 48–58) (Table 3). On the contrary, 60% (95% CI = 55–65) respondents felt that VAs did not have a global approach, 64% (95% CI = 59–68) thought they could not deal with any subject, and 87% (95% CI = 84–91) did not find them humoristic. GPs' opinion on VAs was divided into an easy use by physicians and an adaptative capacity.

GPs with low-literacy patients found the VAs used to be less understandable by patients ($p = 0.02$), to not have a global approach ($p < 0.001$), and of poorer scientific quality ($p = 0.002$).

3.3. GPs' expectations for the use of VAs during consultation

3.3.1. Ideal quality of VAs

In GPs' opinion, VAs should above all be easily understandable by patients (Fig. 3). Then, they should be useful for physicians, patient-centred

Table 3
Perceived quality of used VAs, pooled data ($n = 374$).

Visual aids:	Strongly disagree n (%)	Disagree n (%)	Undecided n (%)	Agree n (%)	Strongly agree n (%)	Comparison with age	Comparison with gender		Comparison with perceived literacy of registered patients		Comparison with educational level of registered patients	
						p	p	Reference group	p	Reference group	p	Reference group
Are in accordance with latest evidence-based practice	12 (3,2)	35 (9)	122 (33)	132 (35)	73 (19.6)	0.59*	0.27**		0.37*		0.01*	High level
Exist for any subject	109 (29)	128 (34)	84 (23)	36 (9,6)	17 (4.5)	0.31*	0.01*	Male	0.12*		0.01*	High level
Have a global approach to a subject (anatomy + pathophysiology + treatment…)	89 (24)	134 (36)	94 (25)	37 (10%)	18 (4.8)	0.88*	0.01*	Male	0.06*		<0.01**	High level
Are easily understandable by patient	6 (1.6)	41 (11)	129 (35)	134 (36)	63 (17)	0.78**	0.06**		0.01**	High literacy	<0.01**	High level
Are patient-centred = possibility to give precise and restricted information to a specific patient	45 (12)	61 (16)	113 (31)	102 (28)	50 (14)	0.65*	0.02*	Male	0.14*		0.53*	
Are humorous	215 (58)	111 (30)	31 (8.3)	12 (3.2)	3 (0.8)	0.36**	0.05**		0.85**		0.59**	
Are easy and intuitive for GPs to use	39 (11)	56 (15)	132 (36)	98 (26)	47 (13)	0.45*	0.34*		0.01*	High literacy	0.31*	

* chi-square test, ** Fisher's exact test.

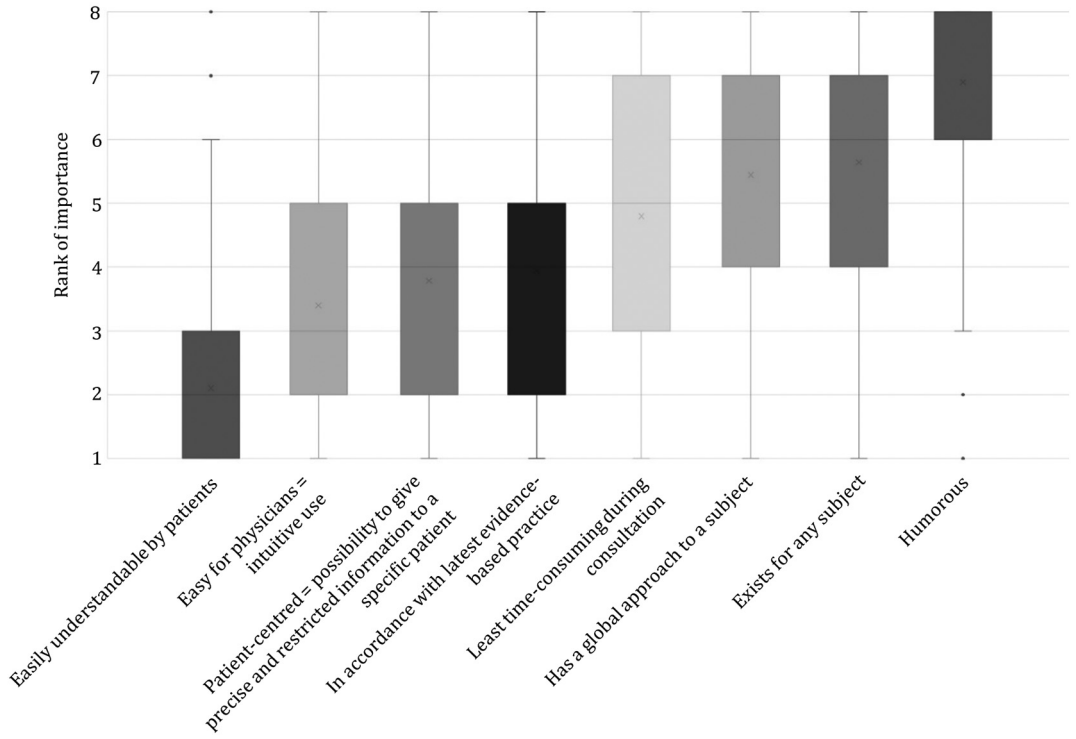

Fig. 3. Rank of importance for VAs' quality. Rank number one corresponds to the most important rank for the respondent.

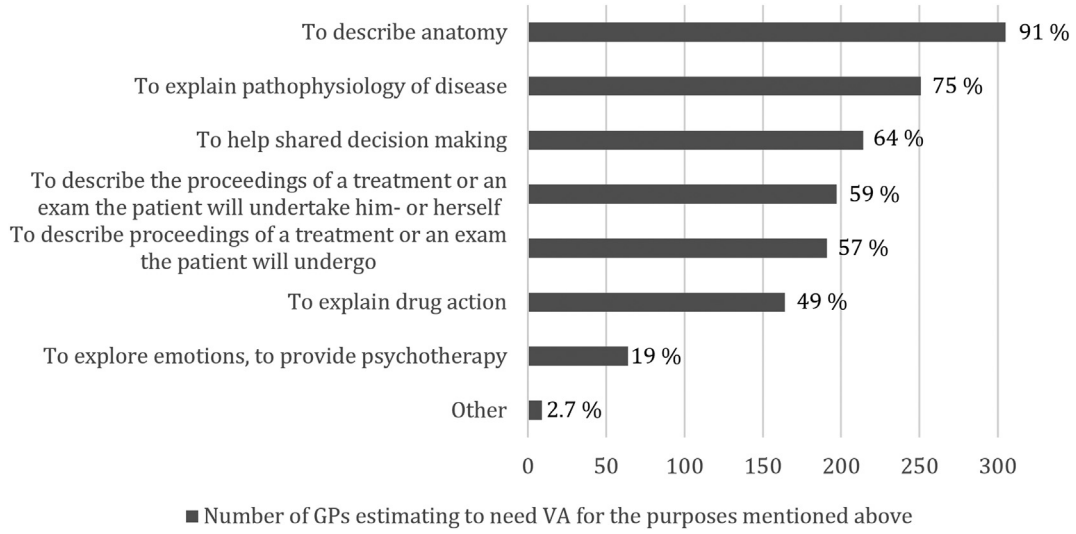

Fig. 4. Purposes requiring good quality VAs.

and in accordance with latest evidence-based practice. Being the least time-consuming during consultation and having an exhaustive approach seemed to be secondary qualities. Humour did not seem to be an expected feature.

3.3.2. Purposes requiring good quality VAs

Good quality VAs were requested by 91% (95% CI = 88–94) of GPs (Fig. 4). The purposes of using VAs included to describe anatomy, mentioned by 75% (95% CI = 70–79) of respondents; to explain pathophysiology of disease, mentioned by 64% (95% CI = 59–69); to help shared decision making, mentioned by 64% (95% CI = 59–69); to describe treatment or an examination procedure that the patient was going to undergo, mentioned by 57% (95% CI = 53–62); to explain drug action, mentioned by 49%, (95% CI = 44–54); and to explore emotions or to provide psychotherapy, mentioned by 19% (95% CI = 15–24).

3.3.3. Perceived usefulness of VAs

Use of any type of VA was considered useful or very useful by 94% (95% CI = 91–96) of surveyed GPs (Table 4). Sketches were the most useful according to the respondents, with 75% (95% CI = 70–79) finding them useful or very useful. Other VAs were considered useful or very useful by the majority of respondents: anatomical models by 64% (95% CI = 58–69), simple digital images by 62% (95% CI = 57–67), and printed images by 57% (95% CI = 52–62). The remaining VAs were by respondents to varying degrees.

Table 4
Perceived usefulness of VAs used, pooled data (n = 334).

	Useless n (%)	Poorly useful n (%)	Slightly useful n (%)	Useful n (%)	Very useful n (%)	Comparison with age		Comparison with gender		Comparison with perceived literacy of registered patients		Comparison with educational level of registered patients	
						p	Reference group	p	Reference group	p	Reference group	p	Reference group
Sketch	4 (1.2)	12 (3.6)	67 (20)	94 (28)	157 (47)	0.09**		0.36**		0.65**		0.02**	Low level
Anatomical model	11 (3.3)	28 (8.4)	82 (25)	102 (31)	111 (33)	0.04*	Younger	<0.01**	Female	0.56*		0.74**	
Wall poster	48 (14)	84 (25)	103 (31)	70 (21)	29 (8.7)	0.37*		0.04*	Female	0.12*		0.48*	
Printed image of a fact sheet, booklet, book…	11 (3.3)	44 (13)	89 (27)	121 (36)	69 (21)	0.16*		0.03**	Female	0.02*	Low literacy	0.86**	
Simple digital image	20 (6)	21 (6,3)	88 (26)	133 (40)	72 (22)	<0.01*	Younger	0.03*	Female	0.31*		0.42*	
Video	59 (18)	71 (21)	96 (29)	55 (17)	53 (16)	0.08*		0.28*		0.65*		0.93*	
Interactive digital support	50 (15)	73 (22)	99 (30)	65 (20)	46 (14)	0.03*	Younger	0.33*		0.97*		0.80*	
Illustrated medication instructions	83 (25)	81 (24)	89 (27)	55 (17)	26 (7.8)	<0.01*	Younger	<0.01*	Female	0.08*		0.35*	
Any VAs [1]	0 (0)	2 (0.6)	19 (5.7)	87 (26)	226 (68)	0.02**	Younger	0.01**	Female	0.04**	Low literacy	0.19**	

[1] Estimated data, * chi-square test, ** Fisher's exact test.

Free comments (146 comments) reported that VAs were useful whatever the patient's level of literacy. Positive features of VAs were nuanced by some respondents. Some GPs mentioned that not all types of patients were interested in explanations with images and that the use of images was not adequate for all situations. They further mentioned that it was necessary to find a good balance between oral and visual explanations because too many visuals could distract from the primary goal. Several comments also described a realisation of the utility of VAs thanks to our questionnaire. Seventeen GPs requested a unique and reliable database gathering useful VAs, and ten among them explicitly requested a numeric format.

GPs with low-literacy patients considered printed VAs and illustrated medication instructions to be more useful ($p = 0.004$ and $p = 0.009$ respectively). Younger GPs were more likely than older GPs to find simple digital images and illustrated medication instructions useful ($p = 0.01$ and $p < 0.001$ respectively).

4. Discussion and conclusion

4.1. Discussion

This descriptive survey introduces new data on VAs used in general practice consultations, the objectives behind their use and GPs' opinions on their quality, usefulness, and potential improvements.

4.1.1. Use of VAs

Most of the surveyed GPs used VAs on a regular basis without being aware of the literature data on their effectiveness. Sketches were the most commonly used VA, followed by simple digital images and printed images. VAs were mainly used to describe anatomy and accessorily to explain pathophysiology of disease. They were underused for other purposes. From a communication perspective, VAs were essentially used to facilitate comprehension of information. Deliberate use of VAs to improve recall of information by patients, to improve adherence or to capture attention was less frequent, even though their utility in these areas is often described in the literature [12–17.20]. Our questionnaire also validates the hypothesis that VAs could sometimes help structure consultations.

This study helps fill the gap in the literature that was described in the introduction section [45,46] regarding the use of VAs by GPs. In addition, the effectiveness of VAs has been repeatedly demonstrated in the literature [12-32] but some studies have shown mixed results [34-41]. In this context, the GPs of our survey strengthened the idea that VAs are very useful in many primary care situations [34-41]. Further studies are needed to determine in which situations VAs are the most useful and to identify quality criteria for the most useful VAs.

4.1.2. Impediments to the use of VAs

Our study identifies 3 main impediments to the use of VAs.

Looking for good VAs was thought to be time-consuming. On the contrary, the time it took to use VAs during consultation was not considered a limitation for a majority of GPs. This result was also found in a study previously cited above [45]: median duration (interquartile range) of a consultation without VAs was 9 min (6–12 min), versus 10 min (8.6–12 min) if VAs were used, with *no* statistical *significance* ($p = 0.70$).

Perceived quality of VAs can be improved according to the surveyed GPs. A similar result was found in a study about the heterogeneous quality of pictograms on drugs packaging [22]. In 2017, among 26 illustrated fact sheets for patients with kidney failure [50], 20% were considered inappropriate, 60% had no link with the text, and 12% were in contradiction with the text. Guidelines for illustrations for patients [51-53] are poorly followed, as highlighted in a 2015 analysis of 147 printed images about cancer in the United States [54]. This calls into question the feasibility of making good VAs in terms of time and cost, but also their diffusion and their implementation. Other reasons for poor quality of VAs are cited by Rohret et al. [55]: many medical illustrations for patients are based on the subjective opinion of their creator, ease of creation, the cost of production and the potential market targeted. Besides, medical illustrators are used to working for medical students, and they seem to use the same techniques and codes for patient illustrations.

There was also a lack of habit of using existing VAs. A potential explanation is the lack of knowledge of the utility of VAs found in our sample. Several comments highlighted a realisation of the utility of VAs thanks to this questionnaire: we hypothesise that spreading data about their utility could increase the use of VAs.

4.1.3. Expectations of GPs

Almost all GPs found VAs useful or very useful, and a large majority of them felt they didn't use VAs enough, especially in case of potentially low-literacy patients. This favourable opinion of VAs strengthens the idea of their general utility found in the literature [12-33], which is sometimes debated [34-41]. Our study also introduces data that help us understand the discrepancies in the literature. Poor quality VAs can lead to bad results, as shown in a study that found the use of unclear VAs to be frustrating for patients [56]. As expressed in the free comments, VAs are not suitable for all types of situations. This was pointed out in a study in which patients were shown an illustration with a needle to explain a breast cancer biopsy which was perceived as shocking by some patients and distracted them from the original purpose [23].

Described qualities of VAs used in our study contrasted with the GPs' expectations for VAs, such as being easily understandable by patients, being easy and intuitive for physicians to use, being in accordance with the latest

evidence-based practice and being adaptable to each patient in a patient-centred approach. A study conducted in Colorado in 2015 [57] showed the importance of adapting pictures to patients as they increased the attractiveness of the information delivered, patients' attention and comprehension, and persuasion.

Sketches were considered the most useful VA. This is probably because they respond better to the limitations and expectations expressed by GPs. They don't require doctors to waste time searching, they can reach the required scientific level, and they can be adapted to each patient. However, several GPs claimed to be unable to draw and mentioned the heterogeneous quality of sketches. Comments did not reveal an interest in a training program to improve sketching skills. Moreover, younger GPs, who used VAs more often, were more likely to use digital VAs. It seems that digital tools could increase the use of VAs during consultation. The sampled GPs strongly requested a digital database of good VAs; this could be a solution to the limitations and needs expressed by GPs.

4.1.4. Strengths and limitations

This is an original study providing epidemiological data on the use of VAs by GPs, which were lacking in the literature.

Although the sample of surveyed French GPs was not intended to be representative of the French population, our results are worthy of consideration given the large sample of 376 GPs distributed across metropolitan and overseas French territory. Their age distribution by gender is similar to the demographic data on French GPs. Compared with the population of French GPs in 2019 [58,59], with a mean age of 50 and a percentage of training supervisors of 20%, our population included younger GPs and more training supervisors.

The strength of the questionnaire lies in the exploitation of a large literature and the academic experience of the questionnaire writers. However, it was only conducted based on the consensus of three people and was not pretested under real conditions, which could explain some of its imperfections. For the question on the use of different types of VAs, the item “any VAs” was not recorded and its relative importance was only noted afterwards. To compensate, an a posteriori estimate was made, which may have underestimated the use and perceived usefulness of “any VAs”, even though the estimated data were consistent with the complete responses of each respondent. Some of the wording of the questionnaire was not explicit enough, which led to misunderstandings that were highlighted in the free comments. This was the case for the formulations “illustrated medication instructions “ and “interactive digital support.” While the former was not understood because it was not well-known, the latter would probably have benefited from an explanation. This may have led to an underestimation of this data.

This epidemiological study is subject to the classic reporting bias and recruitment bias.

4.2. Innovation

Images appear to be an effective means of communication, and this study describes in detail the use of VAs in general practice consultations. While most existing studies investigate the use of VAs in booklets, videos or drug leaflets used by the patient alone, here the focus is on the use of VAs to improve GP-patient communication in daily practice.

The use of questionnaires and univariate and multivariate analyses was necessary to gather the first objective and quantified data on this topic. Our objective estimation of the health literacy level of each GP's registered patients was particularly innovative. It was based on the addresses of the respondents' practices and the INSEE educational data corresponding to these areas.

4.3. Conclusion

VAs are used in general practice consultations on a regular basis. However, GPs feel they are not used enough and that several purposes of use are insufficiently exploited. This can be explained by a lack of habit and a possible lack of awareness of the usefulness of VAs, as well as by the fact that it can take a long time to find good quality VAs during a consultation. However, the usefulness of VAs for most patients, and particularly those with low heath-literacy levels, is well documented and was clearly perceived by the surveyed GPs. Finally, there is a real unmet need in general practice for VAs that are quickly accessible, easily understood by patients, scientifically correct and adapted to each patient. Informing GPs of the usefulness of VAs in consultation, training them to draw adapted sketches and creating a database of good quality VAs are some possible strategies to increase the use of VAs in general practice consultation.

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Ethics

All procedures followed were in accordance with the Directive (EU) 2016/679 of the General Data Protection Regulation (GDPR). Ethical approval was granted for this study by the Ethics Committee & Institutional Review Board of Mondor Hospital (IRB 00011558), Paris Est Creteil University.

Declaration of Competing Interest

None. The authors have no conflicts of interest to disclose.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.pecinn.2023.100159.

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