

Family medicine residents' training in, knowledge about, and perceptions of digital rectal examination

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Abstract

Objective To evaluate family medicine residents' training in, knowledge about, and perceptions of digital rectal examination (DRE).

Design Descriptive study, using an online survey that was available in French and English.

Setting Quebec.

Participants A total of 217 residents enrolled in a family medicine program.

Main outcome measures Residents' demographic characteristics; the DRE teaching they received throughout their medical training; their reasons for omitting DRE; their recognition of DRE indications (strong vs weak) and application of DRE for 10 anorectal complaints; and their perceptions of the overall quality of the DRE training they received.

Results Of the 879 residents contacted, 217 (25%) responded to the survey. Throughout their training, one-third of respondents did not receive any supervision for or feedback on DRE technique. Seventy-one percent of respondents expressed their inability to identify the nature of abnormal examination findings at least once during their training. The most frequently reported reasons to omit DRE were patient refusal, inadequate setting, and lack of time.

Conclusion Most of the residents in this study had omitted DRE at least once in their clinical work despite recognizing its importance. There was discordance between recognition of a complaint requiring DRE and execution of this technique in a clinical setting. Family medicine education programs and continuing medical education committees should consider including DRE training.

EDITOR'S KEY POINTS

- There is little known about the actual use of digital rectal examination (DRE) in clinical practice and about family doctors' training in this area. This study surveyed family medicine residents in the province of Quebec to investigate their training in, knowledge about, and perceptions of DRE.
- One-third of participants (33%) stated they never received specific practical teaching in or supervision of DRE technique during their medical training. More than half of participants (55%) considered their training in DRE to be average or insufficient. Most (78%) reported performing from 1 to 10 DREs per month, while 10% performed less than 1 monthly.
- Digital rectal examination is often associated with apprehension or fear among patients. Clinicians need to have established a good relationship with the patient, be confident about the necessity of this examination, and be willing to spend some time explaining it to the patient. This aspect of DRE should also be discussed with trainees and should be part of clinical teaching.

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La formation que reçoivent les résidents en médecine familiale sur le toucher rectal, leurs connaissances de cet examen et ce qu'ils en pensent

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R esum e

Objectif  valuer la formation que les r esidents en m edecine familiale re oivent sur le toucher rectal (TR), ce qu'ils savent de cet examen et ce qu'ils en pensent.

Type d' tude  tude descriptive   l'aide d'une enq ete sur le WEB offerte en fran ais et en anglais.

Contexte Le Qu ebec.

Participants Un total de 217 r esidents inscrits   un programme de m edecine familiale.

Principaux param etres   l' tude Les caract eristiques d emographiques des r esidents; la formation sur le TR re ue durant toutes leurs  tudes m edicales; les raisons pour ne pas utiliser le TR; ce qu'ils savent des indications (fortes ou faibles) de cet examen et de sa pertinence en pr esence de 10 types de probl emes ano-rectaux; et leur perception de la qualit e de la formation re ue dans ce domaine.

POINTS DE REP ERE DU R EDACTEUR

• On sait peu de choses sur l'utilisation r elle du toucher rectal (TR) en pratique clinique et sur la fa on dont les m edecins de famille sont form es dans ce domaine. Dans cette  tude, on a utilis e une enq ete effectu e aupr es de r esidents en m edecine familiale de la province de Qu ebec pour conna tre leur formation dans ce domaine, ce qu'ils savent de cet examen et ce qu'ils en pensent.

• Le tiers des participants (33%) ont d clar e qu'ils n'avaient jamais eu de formation pratique sp cifique ni de supervision relativement   la technique du TR durant leurs  tudes m edicales. Plus de la moiti e des participants (55%) consid raient que leur formation dans ce domaine  tait passable ou insuffisante. La plupart (78%) disaient en effectuer entre 1 et 10 par mois, alors que 10% en faisaient moins de un par mois.

• Le toucher rectal soul eve souvent une certaine apr ehension chez le patient. Le m edecin doit donc avoir  tabli une bonne relation avec son patient,  tre s r de la n ecessit e de cet examen et accepter de consacrer un certain temps pour l'expliquer au patient. Cet aspect du TR devrait aussi  tre abord e avec les stagiaires et devrait faire partie de l'enseignement clinique.

Cet article a fait l'objet d'une r evision par des pairs.
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R esultats Sur 879 r esidents contact es, 217 (25%) ont r epondu   l'enq ete. Le tiers des r epondants n'avaient eu aucune supervision ni feedback   propos de la technique du TR durant leurs  tudes m edicales. Parmi eux, 71% ont mentionn e avoir  t e incapables au moins une fois d'identifier la nature d'un r esultat anormal durant leur formation. Les raisons le plus souvent invoqu ees pour ne pas faire de TR  taient le refus du patient, un contexte inad quat et des contraintes de temps.

Conclusion Dans cette  tude, la plupart des r esidents avaient omis de faire un TR au moins une fois dans leur travail clinique m eme s'ils en reconnaissaient l'importance. Il y avait une discordance entre le fait de reconna tre qu'un probl eme mentionn e par le patient exigeait un TR et celui de le faire dans un contexte clinique. Les programmes de formation en m edecine familiale et les comit es responsables de formation m edicale continue devraient songer   inclure une formation sur le TR.

Anorectal complaints are common in front-line medical practice. Review of symptoms and physical examination are essential to distinguish between benign and malignant conditions. Rectal bleeding can be associated with a simple anal fissure or it could be the only symptom of rectal cancer. Not every patient with anal complaints requires advanced diagnostic procedures; however, delay in investigation and diagnosis of malignant conditions can have a dramatic effect on the patient's prognosis. Delay or inadequate treatment of a benign anorectal abnormality can also have a considerable effect on the patient's quality of life. Digital rectal examination (DRE) often helps to orient the diagnosis and can easily be performed in front-line practice.

Primary care practitioners have to perform DRE on a regular basis. The DRE technique is different for evaluating the prostate and investigating anorectal complaints. Few studies have looked at DRE accuracy in the setting of anorectal complaints. In 2008 Ang et al reviewed 1069 referrals to a colorectal outpatient clinic over an 8-month period.¹ They compared the GPs' DRE findings with theirs. The study revealed that rectal examination performed by family doctors had a low sensitivity (0.762) and a poor positive predictive value (0.296). There were no clear reasons reported for this low positive predictive value. Various factors could influence this finding, such as a low incidence of anorectal abnormalities in the study population, difficulty in performing DRE or interpreting findings, or lack of training. Some studies have reported on physicians' confidence, technique, and training regarding DRE, but no study has been designed to identify if these indicators are related to the low value of primary care physicians' performance of DRE.²⁻⁴ Ang and colleagues' study also revealed that 110 of the 1069 patients (10%) referred to the colorectal outpatient clinic did not have a DRE performed before referral.¹

As there is little known about the actual use of DRE in clinical practice and about family doctors' training in this area, we wanted to survey the family medicine residents training in the province of Quebec and investigate their training in, knowledge about, and perceptions of DRE.

METHODS

We designed a 17-question online survey based on review of the medical literature and consultations with a group of GPs and a group of colorectal surgeons. The survey was intended to identify the demographic characteristics of the participants, previous teaching and training received in DRE technique, actual knowledge of DRE indications, their application of DRE in clinical settings, their confidence levels when performing DRE, and the reasons leading to the omission of DRE. Residents enrolled in family medicine programs in the province of

Quebec were identified through the provincial association of medical residents.

As there is no consensus on DRE indications in the medical literature, we surveyed a group of 6 colorectal surgeons and a group of 10 GPs in order to identify the 10 principal complaints that should trigger a DRE in primary care practice. The following complaints were chosen: rectal bleeding, reduction in stool size, change in bowel habits, tenesmus (described as frequent, unproductive straining), anal pain, feeling of incomplete rectal evacuation, constipation, diarrhea, anal discharge, and anal incontinence. In the first part of the survey, respondents had to identify for which of the 10 complaints a DRE would be indicated. Each indication was graded as always (100%), most of the time ($\geq 75\%$), sometimes (25% to 75%), rarely ($< 25\%$), or never (0%). Later in the survey, respondents had to identify how often they would perform a DRE in clinical practice for the same 10 complaints. These 10 complaints were presented randomly in different questions, and previous answers were not available to the respondents.

Information on participant characteristics was collected (sex, education level, and location of training program), as well as details about teaching received throughout their medical training (theoretical teaching and clinical supervision, number of DREs performed monthly). Respondents were surveyed on potential omission of DRE in their clinical training and on potential reasons to omit the examination. Questions on their level of confidence in performing a DRE and evaluating findings were also included. Survey respondents were also asked to evaluate the overall quality of training received in DRE. The survey was tested on a group of general surgery residents for clarity, duration, and ease of use. The survey was available in French and English, the 2 official languages in the province, and both versions were tested.

In February 2014 all residents enrolled in 1 of the 4 family medicine training programs in the province of Quebec were identified through the provincial association of medical residents. Invitations to answer the online survey were sent by e-mail. After a brief description of the study, a link to the survey in the language of their choice (French or English) was available. The survey was available for a period of 4 weeks and reminders were sent to all residents at the beginning of the third and fourth weeks.

Statistical analysis

Descriptive analyses were done using frequencies and percentages for all dichotomous, categorical, and ordinal variables. A McNemar test was used to verify concordance and discordance between the presence of strong indications for DRE (defined as DRE indicated $\geq 75\%$ of the time) and the frequency with which DRE

was performed (defined as DRE performed $\geq 75\%$ of the time) by participants. The test was done for the 10 different complaints requiring DRE noted above. Statistical analyses were performed using SAS statistical software, version 9.3, with a significance level set at $P < .05$.

RESULTS

A total of 879 residents were enrolled in 1 of the 4 programs in the province of Quebec during the study period. The participation rate was 25% for a total of 217 participants. Thirteen respondents abandoned the survey halfway through its completion. Only their answers to the first half of the survey were used for statistical analysis. Of the 217 participants, 77% were women and 23% were men. More than half of the participants were in their first year of residency (55%), 41% were in their second year, and the remainder were in their third year (4%) (**Table 1**).

Regarding their training, 78% of respondents reported having had academic training in DRE during medical school, 44% during internship, and 6.5% during residency. Of all participants, 6.5% denied having received any academic training in DRE. Supervision of and practical teaching in DRE in clinic situations was reported by 25% of respondents during medical school, 49% during internship, and 11% during residency. A third of the residents (33%) stated they had never received specific practical teaching in or supervision of DRE technique during their medical training (**Table 2**). Of all participants, 55% considered their training in DRE to be average or insufficient. Most (78%) of the residents reported performing from 1 to 10 DREs per month, while 10% performed less than 1 monthly.

Table 3 shows the distribution of the answers about the clinical indications and use of DRE for the 10 anorectal complaints. The indication was considered positive when the respondent acknowledged that DRE should be performed most of the time ($\geq 75\%$ of the time). According to the McNemar test results, there was a statistically significant difference between the indication for DRE and the application of this examination for most of the complaints (9 out of 10). Rectal bleeding was the only complaint for which the indication was consistent with the rate of application. For all other complaints, there was a high proportion (ranging from 8% to 22%) of respondents omitting DRE despite recognizing that it should be performed. The data show that DRE was performed despite believing there was no strong indication in 2% to 7% of cases (**Table 3**).

Seventy-one percent of respondents admitted having located a palpable abnormality on DRE findings without being able to identify its clinical significance at least once in their medical training. Eighty-four percent of respondents reported that they had previously omitted DRE at least once even though they thought it was indicated. The most frequent reasons for omitting DRE were patient's refusal (55%), inadequate setting (48%), and lack of time (23%). Detailed reasons for omission are listed in **Table 4**.

DISCUSSION

Little literature exists on DRE indications and application by front-line practitioners. It has been shown that DRE performed by primary care doctors has a low sensitivity and specificity¹; however, the reasons are still unspecified. Balkissoon et al demonstrated an increased accuracy

Table 1. Resident characteristics: Of the 879 residents who were contacted, 217 (25%) responded to the survey.

CHARACTERISTICS	RESIDENTS CONTACTED, N	PARTICIPANTS, N (%)	PARTICIPATION RATE, %
Sex			
• Female	627	167 (77)	27
• Male	252	50 (23)	20
Level			
• First-year resident	422	119 (55)	28
• Second-year resident	400	89 (41)	22
• Third-year resident	57	9 (4)	16

Table 2. Digital rectal examination training respondents received: N = 217.

EDUCATION LEVEL	ACADEMIC TEACHING, N (%)	SUPERVISION AND PRACTICAL TEACHING, N (%)
Medical school	169 (78)	55 (25)
Internship	95 (44)	107 (49)
Residency	14 (6)	23 (11)
Never	14 (6)	72 (33)

Table 3. Recognized indications of DRE versus application

ANORECTAL COMPLAINT	DRE CONSIDERED INDICATED ≥75% OF THE TIME, %	DRE CONSIDERED INDICATED AND PERFORMED ≥75% OF THE TIME, %	DRE PERFORMED <75% OF THE TIME DESPITE CONSIDERED INDICATED ≥75% OF THE TIME, %	DRE PERFORMED ≥75% OF THE TIME BUT CONSIDERED INDICATED <75% OF THE TIME, %	P VALUE (MCNEMAR TEST)*
Rectal bleeding	98	96	2	1	.4142
Reduction in stool size	85	75	10	2	.0027
Change in bowel habits	65	50	15	7	.0183
Tenesmus	73	53	19	3	<.001
Anal pain	91	81	10	4	.0233
Feeling of incomplete rectal evacuation	82	60	22	2	<.001
Constipation	42	24	18	4	<.001
Diarrhea	17	8	8	3	.0218
Anal discharge	92	81	11	2	<.001
Anal incontinence	80	62	18	2	<.001

DRE—digital rectal examination.

*For all indications, except for rectal bleeding, there is discordance between the presence of a strong indication for DRE (defined as DRE indicated ≥75% of the time) and the frequency with which DRE was performed (defined as DRE performed ≥75% of the time) by participants. This discordance suggests a tendency to not perform DRE even if it is considered to be indicated.

Table 4. Reasons for omitting DRE

REASONS FOR OMITTING DRE	RESPONDENTS, %*
Patient refusal	55
Inadequate setting	48
Lack of time	23
Patient's discomfort	20
Patient referred to a specialist	15
Lack of confidence	9
My supervisor will do it	8
Doctor's discomfort	7
Insufficient material	6
Already done by another doctor	3
Forgotten	2

DRE—digital rectal examination.

*Represents the proportion of respondents having experienced this limitation in their practice.

the purpose of this study, we chose 10 DRE indications for digestive complaints. Eighty-four percent of respondents admitted having omitted DRE when judged as appropriate on at least 1 occasion. We sought to investigate the variation between the recognition of the theoretical indication to perform a DRE and its inclusion as part of the clinical examination. We compared the answers of the respondent when presented with the 10 clinical complaints randomly at different steps of the survey, looking at the variation between recognition and performance of DRE. Results of the McNemar test demonstrate a statistically significant discordance in respondents' recognition of an indication for DRE and their inclusion of this procedure in their clinical examination. This discordance was present for 9 of the 10 clinical complaints.

There are several possible reasons for this discordance between theoretical knowledge of DRE indication and its application in clinical practice. Patient's refusal ranks as the number 1 reason for omitting a DRE (55%). Inadequate setting (48%) and lack of time (23%) are frequent reasons for omission. This part of the physical examination is often associated with apprehension or even fear among patients. The clinician needs to have established a good relationship with the patient, be confident about the necessity of this examination, and be willing to spend some time explaining it to the patient. This might be more difficult for trainees than for experienced clinicians. This aspect of DRE should also be discussed with trainees and should be part of clinical teaching.

More than half of the residents (55%) considered their training in DRE to be average or insufficient. Although most trainees (78%) reported having received academic teaching in DRE, a high proportion (33%) reported never

in clinical assessment performed by more experienced doctors compared with less experienced ones.³ The present study was not built to demonstrate such an association, but rather to give a global view of the actual teaching in, knowledge about, and perceptions of DRE according to family medicine residents in the province of Quebec. A survey of qualified family doctors in active clinical practice would probably have revealed different results, especially regarding the inability to identify an abnormality felt on DRE examination, as this would be expected to decrease with more experience.


There are certainly other indications for performing DRE outside the 10 situations included in our survey. For

having received practical teaching and supervision during their medical training. The reasons for this lack of training were not investigated in our survey. Some universities provide standardized patients when teaching physical examination (including DRE) procedures, but other universities do not. During internship, exposure to DRE technique can vary depending on each hospital's subspecialty where students do their rotations. Some supervisors might not feel comfortable performing a second DRE in order to teach practical details of performing DRE and interpretation of DRE findings. During residency, physical examination is not routinely verified, relying on the resident to ask for assistance if he or she is not confident. Some residents might feel their DRE technique is suboptimal but will not ask for supervision, hence missing an opportunity to learn. Lack of training might lead to a lack of self-confidence, which is likely to lead to omission of DRE or patient refusal.

Limitations

Some limitations of this study are worth noting. First, a higher proportion of respondents were female (77%), compared with the proportion originally contacted (71%); this might have biased the results of the survey. Second, as there is no consensus on DRE indications in the medical literature, the 10 anorectal complaints included in the survey were subjectively selected based on the experience of a group of doctors (10 GPs and 6 surgeons). Although it is difficult to know if these are the most important indications, we believe that the 10 anorectal complaints selected accurately represent common DRE indications in clinical practice. Third, evaluation of the application of a clinical act, such as DRE, is limited by the inherent biases of a descriptive survey.

Conclusion

This study investigated family medicine residents' training in, knowledge about, and perceptions of DRE. Academic training appears to be widely available while clinical training is inconsistent. Our study revealed that most of the residents had omitted DRE at least once in their clinical work despite recognizing its importance. It also shows discordance between recognition of a complaint requiring DRE and execution of this technique in a clinical setting. Additional studies are required to identify if this trend is similar for practising front-line clinicians. Family medicine education programs and continuing medical education committees should consider including rectal examination training, as many of the residents in this survey indicated they would be interested in additional training. 

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Contributors

All authors contributed to the concept and design of the study; data gathering, analysis, and interpretation; and preparing the manuscript for submission.

Competing interests

None declared

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