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Gender-based differential management of acute low back pain in the emergency department: A survey based on a clinical vignette

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Abstract

Background: Women may receive suboptimal pain management compared with men, and this disparity might be related to gender stereotypes.

Objectives: To assess the influence of patient gender on the management of acute low back pain.

Design: We assessed pain management by 231 physicians using an online clinical vignette describing a consultation for acute low back pain in a female or male patient. The vignette was followed by a questionnaire that assessed physicians' management decisions and their gender stereotypes.

Methods: We created an online clinical vignette presenting a patient with acute low back pain and assessed the influence of a patient's gender on pain management. We investigated gender-related stereotyping regarding pain care by emergency physicians using the Gender Role Expectation of Pain questionnaire.

Results: Both male and female physicians tended to consider that a typical man was more sensitive to pain, had less pain endurance, and was more willing to report pain than a typical woman. These stereotypes did not translate into significant differences in pain management between men and women. However, women tended to be referred less often for imaging examinations than men and were also prescribed lower doses of ibuprofen and opioids. The physician's gender had a modest influence on management decisions, female physicians being more likely to prescribe ancillary examinations.

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Conclusion: We observed gender stereotypes among physicians. Our findings support the hypothesis that social characteristics attributed to men and women influence pain management. Prospective clinical studies are needed to provide a deeper understanding of gender stereotypes and their impact on clinical management.

Keywords
gender bias, gender management, gender stereotypes, low back pain, pain

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Introduction

In Switzerland, more than 35% of the adult population report suffering from low back pain (point prevalence), according to the latest national populational survey.[1] Low back pain is known for being an important public health problem at a global scale.[2] Its prevalence and management differ across certain segments of the population. Low back pain is almost three times more prevalent in people with a low level of education (compulsory school only) than in those with a university education (14% versus 5%).[1] Pain management is often inadequate[1,2] with disparities observed between patients from different ethnicity, age, or gender.

Usually, sex refers to the biological characteristics associated with male, female, or intersex people and gender to socially constructed characteristics associated with being a girl/woman or a boy/man. Then, sex starts with chromosomes followed by their influence on gene expression, hormone secretion, and phenotypical sexual characteristics. Gender rises from norms that determine position in power relations, roles, behaviors. Moreover, gender can be understood as a nonbinary spectrum, with people identifying with neither male or female gender or transitioning from one gender to another.[3,4] If both sex and gender categories can have independent impact on health issues, they also can be conceptualized as intertwined.[5] In this article, we chose to use the term "gender" since we are interested in gender stereotypes and norms in pain management, which are related to roles and behavior dimensions of gender.

Evidence of existing sex and gender influences on health issues is rising. Gender perspectives are more and more acknowledged in medical community, medical research, educational programs, and health care institutions.[6]

Regarding pain, literature reports that men and women receive different pain treatment,[7,8] with variations in drug therapy,[9–12] in prescriptions for paramedical examinations,[13,14] and in psychological care for the same pain complaint.[15,16] Differences also exist in the underlying diagnosis proposed as the cause of pain.[13] For instance, women are more likely than men to receive a nonspecific somatic or psychological etiology and, therefore, be treated with lower dose analgesia,[13] or to be given antidepressants instead of analgesics.[15,16]

There are known differences in pain perception and expression between men and women. In addition, there are biological and pathophysiological pain differences related to gender, and as a result, women have less efficient pain control pathways, and a higher chance of developing chronic pain.[7,17] However, quantitative evidence of differences in analgesic prescription between men and women is mixed and conflictual.

Few studies have investigated the direct association between stereotyping related to pain by health care providers and their pain management decisions for patients. In most studies, gender was investigated among other variables such as race/ethnicity and socioeconomic status,[15,18,19] and there was considerable heterogeneity between health care providers (doctors, students, or nurses).[12,13,15,16]

Gender differences in pain management are in part related to gender stereotypes. Men are commonly stereotyped as being less sensitive to pain, more tolerant, and less willing to report pain.[20–23] This social learning, developed from childhood by gender role attribution, could contribute more to the differences between men and women in their pain experience than the biological aspects do.[20] These stereotypes could also be partly responsible for differences in pain management found among physicians.[19,24,25] For example, a man who reports pain may be taken more seriously if the societal view is that a man only complains if his pain is real and intense. On the contrary, a woman's report may be minimized if women are considered less tolerant and more likely to report pain more often than men.

The identification of potential stereotypes and disparities in pain management is an important first step in developing educational interventions to reduce gender bias, minimize disparities, and thus improve patient care. The first objective of this study was to assess the influence of patient gender on the management of acute low back pain. We also aimed to assess whether the physician's gender had an influence on management decisions. We used a standardized vignette that included patient's gender as the patient's only changing variable. We also wanted to detect potential stereotypes related to pain among physicians through a validated questionnaire and assess whether male or female physicians were more prone to stereotypes than the others.

Materials and methods

Study design

Our study is a vignette-based, cross-sectional study among French-speaking Swiss emergency departments' physicians. STROBE and CHERRIES guidelines have been consulted to support design elaboration (Supplemental Annexes 3 and 4).

We assessed pain management by physicians using an online clinical vignette describing a consultation for acute low back pain in a female or male patient. The vignette was followed by a questionnaire that assessed physicians' management decisions and their gender stereotypes.

The study was not in the scope of the Federal Act on Research involving Human Beings, which was confirmed by the dedicated Ethics Committee (Commission cantonale d'éthique de la recherche sur l'être humain, CER-VD).

Study population

The questionnaire was sent to physicians working in the emergency and internal medicine departments of hospitals in the French-speaking part of Switzerland between January and April 2018. The targeted medical centers were two university hospitals (Lausanne (hospital and ambulatory care) and Geneva), and six regional centers (Neuchâtel, Fribourg, Payerne, Sion, Nyon, and Delémont). Interns, residents, and staff physicians were all invited to participate in the study. Inclusion criteria were to be a physician (intern, resident, or staff physician), to work in one of the targeted medical centers, and to have given his or her written consent online for the use of collected data. Exclusion criteria included participants who did not speak French fluently and those who had a previous degree in social sciences or social medicine. Only fully completed questionnaires were extracted and analyzed.

Recruitment procedure

We used an online survey software (Surveygizmo software) to build the online questionnaire. Protected mailing lists of hospital department physicians were used to send the questionnaire link to participants. We presented the clinical study to participants as a 10-min questionnaire to evaluate differences in pain management between hospital-based physicians and general practitioners. Participants were blinded to the true research objective to avoid biased answers. The participation was on voluntary mode with no incentives offered. Participant's consent for the use of collected data only for the present research was needed to open and fulfill the survey. Participants were informed that the participation was totally anonymous. We tested the link and questionnaire functionality among five physicians from our department before sending it to participants.

The questionnaire was organized into three parts with a total of 24 items: the first section consisted of a vignette presenting a clinical case (of a male or female patient) with multiple-choice questions regarding investigations and treatment (5 items); the second section was a validated questionnaire assessing pain-specific gender stereotypes (Gender Role Expectation of Pain (GREP) scale)[23] (3×4 items); and the third section collected demographic and professional characteristics of the participating physicians (7 items).

We used adaptating questioning when possible and put one question per page to improve the fluidity of the process.

The software automatically randomized the participants and assigned them either a clinical vignette with a male patient or a clinical vignette with a female patient, in a 1:1 ratio. Every data were then extracted from the online survey into an Excel sheet. This sheet was used for statistical analysis.

Clinical vignette

The clinical vignette (Supplemental Annex 1) presented a white patient (a man or a woman) who was consulting for acute nonspecific low back pain. The scenario described the patient's main complain, the circumstances surrounding the start, intensity, duration, and evolution of the pain. We provided elements of social context that were as gender neutral as possible, and the patient's gender was the only changing item. Clinical examination and vital signs were presented. The vignette did not include any red flags indicative of a serious condition.

Variables

The questionnaire then assessed the physicians' management decisions (Supplemental Annex 1). Questions were mostly based on local guidelines for low back pain management in ambulatory care,[26,27] but also included pragmatic questions about real-life prescriptions. To assess pain management, participants had to choose between four types of analgesics (paracetamol, ibuprofen, opioids, or myorelaxants) with three dosage thresholds. An analgesics score was then built (Supplemental Annex 2) ranging from 0 (no medication) to 7 (maximum number and dosage of medications). Participants were also asked whether they would order ancillary examinations (radiography, computed tomography scan, or magnetic resonance imaging). We also asked if they prescribed nonpharmacological interventions (physiotherapy, manual medicine, or acupuncture). Finally, the participants had to evaluate the risk of the patient developing chronic pain (1% to 100%), as well as the need for the patient to take medical leave and its duration (3 days, 1 week, or 2 weeks).

Physician had to provide their age, gender, years of practice, position in hospital (intern, resident, senior), and

if they have another degree than the usual pregraduate medical courses.

GREP scale

The presence of gender stereotypes specific to pain among the participating physicians was assessed using the GREP questionnaire.[23] This scale assesses gender-related stereotypic attribution of pain sensitivity, pain endurance, and willingness to report pain. It comprises 12 visual analog scales (from 0 to 10) that measure two distinct levels: first participants have to compare a typical man to a typical woman regarding these three dimensions. Then, it assesses the participants' attributions of personal pain sensitivity, pain endurance, and willingness to report pain relative to the idea of a typical man and woman.

The GREP questionnaire was only available in English. We translated it into French with the agreement of the authors. We performed an English-to-French translation and asked two native English speakers to perform a back translation from French to English. We then compared it with the original version and collectively discussed and resolved differences based on consensus. Finally, we adapted the French version and agreed on a definitive version.

Sample size estimation

The number of participants needed for the study was based on a 15% difference in pain management decisions (pain medication and examinations) between male and female patients (30% in men versus 15% in women). From this estimation, 242 participants were required for a power of 80% and an alpha error of 0.05.

Statistical analysis

Univariate analysis. Proportions between groups (male and female patients) were compared using chi-square tests, Fisher's exact test for small sample size numbers, and Wilcoxon Mann–Whitney test for continuous variables, as appropriate.

Each dimension of the GREP scale (pain sensitivity, pain endurance, and willingness to report pain) was calculated for each physician. We compared the results between male and female physicians using a *t*-test to assess whether one group had more gender stereotypes related to pain than the other.

Multivariate analysis. We applied logistic regression to analyze the effect of patient's gender on prescription of a complementary examination and nonpharmacological treatments, adjusting for physician's gender and years of medical education. A Poisson regression was applied to estimate the effect of patient's gender on the analgesics score, adjusting for the same covariates. Interactions between patient and physician gender and between gender of patient and years of medical education were evaluated in all estimated models.

Without over-interpreting the results of an analysis that is essentially descriptive, we nevertheless consider as statistically significant those effects whose p value is below the conventional threshold of 0.05.

Results

Population

The online survey invitation was sent to 414 physicians; 231 responded completely (55%), of whom 125 (54.2%) had a male patient vignette and 106 (45.8%) a female patient vignette. Of the participants, 41.6% were women and 58.4% men; 56.3% were interns, 20.3% residents, and 23.4% senior doctors, with a net decrease in the proportion of women among senior doctors (Table 1). Median professional experience was 5 years (interquartile range (IQR) = 7–12; 5 years for women and 7 years for men). Most participants (25%) were employees of a university hospital.

Results by patient gender

The patient's gender did not significantly influence the physicians' investigations and treatment decisions, except for the highest dosage of ibuprofen and the use of acupuncture as detailed below. However, there was a tendency by physicians to provide lower dose analgesia to female patients (Table 2). Imaging was recommended in 11.7% of situations, in which conventional radiography was

Table 1. Participant characteristics.

	All, $n = 231$	Female physicians, $n = 96$ (41.6%)	Male physicians, $n = 135$ (58.4%)	p
Age (years), *M* (*SD*)	35.6 (7.9)	32.4 (6.4)	36.2 (8.4)	*<0.05*
Years of practice (years), *mdn* (IQR)	5 (3.12)	5 (3.7)	7 (3.15)	*<0.05*
Position in hospital, *n* (%)				*<0.05*
Intern, *n* (%)	130 (56.3)	66 (68.8)	64 (47.4)	
Resident, *n* (%)	47 (20.4)	20 (20.8)	27 (20.0)	
Senior doctor, *n* (%)	54 (23.38)	10 (10.42)	44 (32.59)	

n: number; *SD*: standard deviation; IQR: interquartile range; *M*: mean; *mdn*: median.

Table 2. Acute low back pain management: results by patient gender.

		Female patients, $n = 106$ (45.9%)	Male patients, $n = 125$ (54.1%)	Total, $n = 231$	p
Analgesics, *n* (%)	Total	96 (90.6)	118 (94.4)	214 (92.6)	*0.27*
	Paracetamol (500 mg)	5 (4.7)	9 (7.2)	14 (6.1)	*0.43*
	Paracetamol (1000 mg)	71 (67.0)	80 (64.0)	151 (65.4)	*0.64*
	Ibuprofen (400 mg)	56 (52.8)	56 (44.8)	112 (48.5)	*0.22*
	Ibuprofen (600 mg)	36 (34.0)	59 (47.2)	95 (41.2)	***0.04***
	Tramadol (25 mg)	7 (6.1)	7 (5.1)	14 (6.1)	*0.75*
	Tramadol (50 mg)	27 (25.5)	40 (32.0)	67 (29.0)	*0.28*
Myorelaxants, *n* (%)	Total	59 (56)	80 (64)	139 (60.2)	*0.19*
	Tolperisone (150 mg)	15 (14.2)	17 (13.6)	32 (13.9)	*0.90*
	Tizanidine (2–6 mg)	44 (41.5)	63 (50.4)	107 (36.3)	*0.18*
Analgesics score, *mdn* (IQR)		3 (2.5)	4 (3.5)	3 (2–5)	*0.37*
Ancillary examination, *n* (%)	Total	11 (10.4)	16 (12.8)	27 (11.7)	*0.57*
	X-ray	8 (7.6)	15 (12.0)	23 (10.0)	*0.26*
	CT scan	1 (0.94)	0 (0.00)	1 (0.4)	*0.28*
	MRI	1 (0.9)	2 (1.6)	3 (1.3)	*0.66*
Nonpharmacological interventions, *n* (%)	Total	47 (44.3)	51 (40.8)	98 (42.4)	*0.59*
	Physiotherapy	37 (34.9)	40 (32.0)	77 (33.3)	*0.64*
	Osteopathy	3 (2.8)	6 (4.8)	9 (3.9)	*0.44*
	Manual therapy	6 (5.7)	9 (7.2)	15 (6.5)	*0.64*
	Acupuncture	0 (0.00)	6 (4.8)	6 (2.6)	***0.02***
Sick leave	Yes, *n* (%)	76 (71.7)	93 (74.4)	169 (73.2)	*0.64*
Risk of chronic pain, % *M* (*SD*)					*0.65*
	Risk 0%–20%	76 (72.4)	82 (66.7)	158 (68.4	
	Risk 20%–40%	18 (17.1)	26 (21.1)	44 (19.1)	
	Risk 40%–60%	8 (7.6)	13 (10.6)	21 (9.1)	
	Risk 60%–80%	3 (2.9)	2 (1.6)	5 (2.2)	
	Risk 80%–100%	0 (0.0)	0 (0.00)	0 (0.0)	

n: number; *SD*: standard deviation; IQR: interquartile range; *M*: mean; CT: computed tomography; MRI: magnetic resonance imaging.

proposed for the majority. Although female patients tended to be recommended for radiography less frequently than male patients, the results were not statistically significant (7.5% versus 12.0%, respectively, $p = 0.26$).

Regarding pain treatment, physicians tended to prescribe lower doses and to apply a lower analgesic threshold to women. Ibuprofen (600 mg) was prescribed to only 34.0% of women versus 47.2% of men ($p = 0.04$). Lower doses of ibuprofen (400 mg) were prescribed to 52.8% of women versus 44.8% of men ($p = 0.22$). This tendency was also seen in prescriptions for tramadol and myorelaxant (tolperisone (150 mg) and tizanidine (2–6 mg)). Nonpharmacological treatments were proposed in 42.4% of the acute situations. Physiotherapy was prescribed in one-third of cases (33.3%), with no differences between male and female patients. Sick leave was given in 73.2% of situations, without observed differences related to patient gender. Acupuncture was proposed in very few cases (12 instances, 2.6%) and only in men. Finally, the participants' estimation of the risk for the patient to develop chronic pain showed no differences between male and female patients. Most of the participant (68%) estimated this risk was low, between 0%–20%.

Results by physician gender

Physician gender also influenced pain management, as shown in summary in Table 3. Female physicians proposed performing imaging in 18% of cases versus 7.5% by male physicians ($p = 0.02$). Regarding analgesic treatment, men tended to prescribe higher dosages than women.

Multivariate model. When adjusted for physician gender and number of years in practice, prescriptions for analgesics, ancillary examination, and nonpharmacological treatments were not significantly different according to patient gender (Table 4). As in the univariate analysis, women tended to receive fewer ancillary examinations than men did and were less likely to be prescribed a combined or high dose of painkillers, according to our score.

Interaction between physician gender and patient gender was assessed but results did not reach significance (not shown).

GREP scale

Based on the GREP questionnaire, male and female physicians tended to consider that a typical man was more

Table 3. Acute low back pain management: results by physician gender.

	Female physicians, *n* = 96 (41.6%)	Male physicians, *n* = 135 (58.4%)	All, *n* = 231	*p*
Analgesics, *n* (%)	6 (6.25)	11 (8.15)	17 (7.36)	*0.58*
Myorelaxants, *n* (%)	63 (65.6)	70 (56.3)	139 (60.2)	*0.15*
Analgesics score, *mdn* (IQR)	3 (2.5)	4 (3.5)	3 (2–5)	*0.37*
Ancillary examination, *n* (%)	17 (17.7)	10 (7.4)	27 (11.7)	***0.02***
X-ray	14 (14.6)	9 (6.7)	22 (10.0)	*0.05*
CT scan	1 (1.04)	0 (0.00)	1 (0.43)	*0.24*
MRI	1 (1.04)	2 (1.48)	3 (1.30)	*0.77*
Nonpharmacological interventions, *n* (%)	47 (44.3)	51 (40.8)	98 (42.4)	*0.59*
Sick leave, *n* (%)	74 (77.1)	95 (70.40)	169 (73.16)	*0.26*
Risk of chronic pain, % *M* (*SD*)				*0.52*
Risk 0%–20%	61 (63.54)	97 (71.85)	158 (68.40)	
Risk 20%–40%	21 (21.88)	23 (17.04)	44 (19.05)	
Risk 40%–60%	11 (11.46)	10 (7.41)	21 (9.09)	
Risk 60%–80%	2 (2.08)	3 (2.22)	5 (2.16)	
Risk 80%–100%	0 (0.00)	0 (0.00)	0 (0.00)	

n: number; *SD*: standard deviation; IQR: interquartile range; *M*: mean; CT: computed tomography; MRI: magnetic resonance imaging.

Table 4. Multivariate analysis.

	Analgesics score				Complementary examination				Nonpharmacological interventions			
	Median ratio	95% CI		*p*	OR	95% CI		*p*	OR	95% CI		*p*
Female patient	**0.93**	**0.81**	**1.07**	**0.29**	**0.74**	**0.31**	**1.69**	**0.473**	**1.14**	**0.67**	**1.94**	**0.62**
Female physician	1.04	0.90	1.19	0.64	2.18	0.95	5.25	0.072	0.71	0.41	1.24	0.23
Years of medical practice	0.99	0.98	1.00	0.20	0.89	0.79	0.97	0.021	0.96	0.92	1.00	0.06

CI: confidence interval; OR: odds ratio.

sensitive to pain, had less pain endurance, and was more willing to report pain than a typical woman (Figure 1(a)), without significant differences between answers of male and female physicians.

Concerning male and female physicians comparing themselves to a typical male/female: they considered themselves as less sensitive to pain, more pain enduring, and less willing to report pain than a typical man or woman. For pain sensitivity, there was a significant difference between male and female physicians, with male physicians considering themselves practically as sensitive as a typical female, while female physicians considered themselves as less sensitive to pain than a typical female (Figure 1(b)).

Discussion

In this study, we aimed to assess whether a patient's gender influenced physician pain management in acute nonspecific low back pain and if there were gender stereotypes related to pain among physicians.

Even if we were able to detect those stereotypes, they did not translate into statistically significant differences in pain management between male and female patients. However, we observed patterns, suggesting that physicians are less likely to request imaging tests for women than for men. This suggests that women received care more in line with current guidelines for nonspecific low back pain, and reveals that physicians tend to investigate low back pain by imaging in men, even though it is not recommended. This might reveal taking men's complaints more seriously, to the point of engaging in unnecessary prescriptions. Physicians also prescribed opioids less frequently and lower doses of ibuprofen for women than they did for men. Physician's gender also had an influence on clinical management, with female physicians being more likely to order imaging and male physicians to prescribe opioid treatments.

Gender stereotypes among physicians

Stereotypes are not conscious, but they influence how health care providers think about an individual and its medical presentation, leading to unintended (implicit) biases in clinical reasoning. As for cultural stereotypes,[28] all of society is susceptible to gender bias, including physicians. Previous studies have shown multiple examples of implicit gender bias in medical students[29,30] and physicians,[31–33] in Switzerland and internationally. Concerning gender stereotypes specific to pain, the GREP scale has not

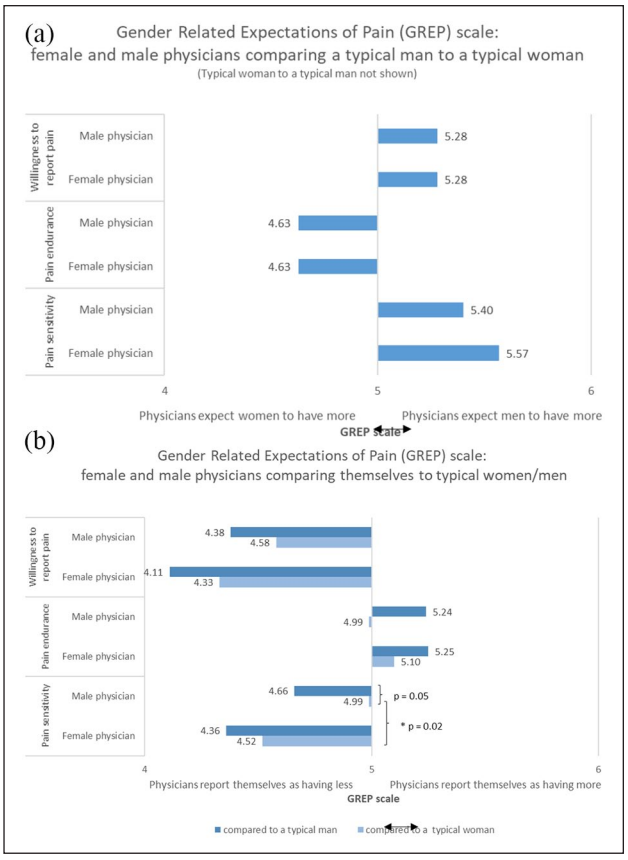

Figure 1. (a) GREP scale: female and male physicians comparing a typical man to a typical woman. Expectations of pain sensitivity, pain endurance, and willingness to report pain; (b) GREP scale: female and male physicians comparing themselves to typical women or a typical man. Expectations of pain sensitivity, pain endurance, and willingness to report pain. GREP: Gender Role Expectation of Pain.

yet been used in the Swiss population. Using the GREP questionnaire, both male and female physicians in our sample had similar gender stereotypes. Interestingly, these were the opposite compared with stereotypes observed in other studies originating in the United States and Canada.[23] This supports the hypothesis that gender stereotypes related to pain are influenced by cultural factors.[34]

Differences in pain management due to a patient's gender

Although sex-specific differences in pain physiopathology, pain perception, and response to analgesia have been documented in the literature,[17,35] only a few studies have assessed the influence of patient gender in pain management, and among these, the results vary considerably.

Studies have suggested the presence of gender bias regarding pain management, with a clear tendency showing that extensive work-up[14] or invasive investigations[36–38] are proposed more frequently for male patients than for female patients who report the same concern. This tendency was present in our study. It is also known that women are offered less intense physical rehabilitation program then men, an aspect that was not included in our research.[39]

Although some studies pointed out that female gender was a risk factor for oligo analgesia in emergency departments[10,11] and postoperative contexts, others did not find any differences,[15,16,19,25] or showed that women received analgesia more frequently and at higher doses than men did.[12,18] These variations can be explained by the heterogeneity of the methods used to assess gender bias, the population studied, or the nature of the pain. Studies in which the patient gender did not appear to be an influential factor were performed in a setting where gender was analyzed concomitantly with other variables such as race, socioeconomic status, and depression,[15,16,19] which could have confounded the provider's decisions. Moreover, the health care providers were heterogeneous, as some studies included either physicians, medical students, or nurses.[12,15,16] In addition, studies mostly used virtual human technology (computer-generated patients programmed to express painful facial expressions) associated with clinical vignettes[15,16,18,19] rather than real clinical situations. The studies that revealed disparities in analgesic treatment were mainly retrospective studies of pain presentation in the emergency department with patient gender being the only tested variable.[9–11] The results of our study with clinical vignettes in an acute medical context follow this pattern.

Unlike the US studies, where men are commonly stereotyped as being less sensitive, more tolerant, and less willing to report pain,[20–23] our study demonstrated the exact opposite. If, among physicians practicing in Switzerland, male patients are considered more sensitive and less resistant to pain, health care providers might be more prone to use analgesics for men. Male patients could also be taken more seriously when reporting pain.[37,40]

The hypothesis that social characteristics attributed to men and women (gender) have more influence than biological characteristics (sex) when physicians evaluate pain has been described previously in the literature.[41] For example, a study showed that participants who defined themselves as more "masculine" showed higher pain tolerance than did those who considered themselves as more "feminine."[20] Another article reported that men with chronic pain were perceived by caregivers as being less masculine than a typical man.[24] These findings support the hypothesis that social learning of pain and gender influences pain perception by both patients and providers, in addition to biological or epidemiological aspects.

Concerning drug prescription and gender, physicians could have prescribed women smaller dosages of analgesics to adapt to lower body weight alone. However, to date, no recommendation has been made to adapt the dosage to the gender of the patient. Historically and especially before the US National Institute of Health (NIH) Revitalization Act of 1993 and the following equivalents in some

European countries, clinical trials have mainly been conducted on men taking the male body as the standard norm. Findings were simply extrapolated to women, excluded as research subjects. This androcentric medical research led to recommended drug dosages based on male bodies. The disregard for the fundamental biological differences between male and female bodies led to a serious drug dose gender gap and a higher adverse drug event rate in women.[42,43] Previous studies showed that the ignored sex differences cannot be reduced to body weight differences alone.[44] Voices in medicine and gender research raise to correct this androcentricity by further research including sex and gender correctly.[45,46]

Bias in pain management due to physician gender

The physician's gender is also known as a factor that influences patient care. Some studies have shown that female physicians tend to be more patient centered[47] and consider highly the psychosocial information.[47–49] However, few studies have assessed the direct relationship between the provider's gender and its impact on pain management. One of these studies revealed that male physicians tended to consider pain symptoms less credible if they were not associated with a clear diagnosis, and, therefore, were less likely to prescribe analgesics.[24] Some authors have also shown that physicians prescribed more analgesics to patients of the same gender as their own.[19,25] The interaction between patient's and physician's gender was not significant in our study, likely due to our small sample size.

Limitations and strengths of the study

Our study has several strengths. Participants were blinded to the aim of the study, which decreased the risk of desirability bias. We conducted a multicenter study that included physicians with different training backgrounds, allowing us to assess the impact of patient gender on various populations of providers.

Nevertheless, this study did not allow us to evaluate pain management disparities from an intersectional point of view (i.e. also including other social determinants of health susceptible to influence pain management such as ethnicity, socioeconomic position, and age) which also influence pain management. This strategy allowed us to isolate the effect of gender but cannot provide data on potential intersection between gender and others social determinants of health. Our results enlighten only a small part of more complex situations, since patients can cumulate more than one characteristic influencing pain or other health issue.

The study was performed in a population from one Swiss region. Because pain perception expression is influenced by cultural factors,[34] our results cannot be generalized to other culturally different settings.

Clinical vignettes offer a standardized way to isolate the effect of gender but might also explain the very few statistically significant results. Indeed, clinical vignettes are not as realistic as clinical situations, in which emotional and relational aspects might influence gender stereotypes in pain management. Indeed, bias tends to appear when decisions are taken under pressure, stress, or emergency as shown by colleagues in cardiovascular diagnosis.[50] Moreover, when using multiple-choice closed answers, there is a risk of inducing decisions that the physician would not have taken in a real situation. In terms of content, low back pain management, at least in its acute presentation, is clearly described in clinical guidelines, leaving less room for non-evidence-based decisions and, therefore, the influence of anything other than clinical considerations. A further limitation to mention here concerns current guidelines. Participants were given the option to choose paracetamol as antalgic medication. At the time of the study, local guidelines still recommended paracetamol as a therapeutic option.[26,27] Even though paracetamol is no longer recommended for this indication,[27,51–53] this question was included to align the vignette with locally persisting practices. Furthermore, participants were asked if they would order ancillary examinations such as radiography, computed tomography scan, or magnetic resonance imaging. Despite the fact that local guidelines[27] and international guidelines[52–54] do not recommend prescription of imaging for acute nonspecific low back pain, we included this option to capture the real-world practices. We recognize that this limits the interpretation of results and further recommendations.

Conclusion

The results of this vignette-based cross-sectional study showed differences in pain management by patent's gender. Women tended to receive less painkillers and men more ancillary examination. These tendencies need to be confirmed by clinical prospective research, including an intersectional perspective as well. Future prospective studies should investigate not only of the influence of patients' and physicians' gender on low back pain management by medication and investigations, but also low back pain management by alternative approaches, such as recommended by current guidelines, including self-management, exercise therapies, and manual therapies.

Declarations

Ethical approval and consent to participate

No patients were involved in this study. Participation of physicians was optional and voluntary. Physicians' consent for the use of collected data they produced was needed to open and fulfill the survey, and, therefore, obtained through online written form. The study was not in the scope of the Federal Act on Research involving Human Beings, which was confirmed by the dedicated Ethics

Committee (The Cantonal Commission for the Ethics of Research Involving Human Beings, CER-VD).

Consent for publication

Participating physicians were all anonymized and consented with publication of the results of the study. Indeed, physicians' consent for the use of collected data they produced was needed to open and fulfill the survey, and, therefore, obtained through online written form.

Author contribution(s)

Léa V Schilter: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Writing—original draft.
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Olivier Hugli: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Supervision; Validation; Writing—review & editing.
Isabella Locatelli: Formal analysis; Writing—review & editing.
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Competing interests

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Availability of data and materials

Data are available by contacting the corresponding author.

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Supplemental material

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