

Attitudes, beliefs, and practices regarding medication prescribing for musculoskeletal conditions: a protocol for a national Q-methodology study of Swiss chiropractors

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Background: Since 1995, chiropractors in Switzerland have been licensed to prescribe medications for treating musculoskeletal conditions. However, controversy remains over whether or not medication prescribing should be pursued within the chiropractic profession internationally.

Objective: To assess Swiss chiropractors' attitudes, beliefs, and practices regarding their existing medication prescription privileges.

Methods: A Q-methodology approach will be used to collect data for the assessment. In addition,

Contexte : En Suisse, depuis 1995, les chiropraticiens sont autorisés à prescrire des médicaments pour traiter des affections musculosquelettiques. Cependant, la prescription de médicaments par les chiropraticiens à l'échelle internationale fait toujours l'objet d'une controverse.

Objectif : Évaluer les attitudes, les croyances et les pratiques des chiropraticiens suisses en ce qui concerne leur droit actuel de prescrire des médicaments.

Méthodologie : Une méthodologie Q sera utilisée pour recueillir les données nécessaires à l'étude. En

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scope expansion and frequency of prescribing by Swiss chiropractors will be queried using a 13-item questionnaire. Recruitment will be conducted by e-mail and all members of the Swiss Chiropractic Association will be eligible to participate. Data will be analyzed using by-person factor analysis and descriptive statistics.

Discussion: This will be the first national update on attitudes toward prescribing medications among Swiss chiropractors since 2003, and the first using Q-methodology. The results of this study are important as they will inform future directions and research regarding chiropractic prescription rights.

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KEY WORDS: chiropractic, attitudes, beliefs, drug prescription, Switzerland, Q-methodology

Introduction

Prescribing medications remains a contentious issue within the chiropractic profession.^{1,2} At present, less than five percent of countries worldwide allow for such privileges.³ However, chiropractors who have medication prescribing rights, such as in Switzerland, perceive these privileges as an advantage for the profession.^{4,5} Moreover, Swiss chiropractors view continuing education in pharmacology as a necessary component of this privilege.⁵ In contrast, there is a general split in opinion among chiropractors regarding medication prescription rights in countries where chiropractors are not currently licensed to prescribe medications.^{1,2} Previous literature indicates that much of this disagreement stems from philosophical differences within the profession.^{6,7} Findings from Emary and Stuber^{7,8} also suggest that aspects of this division may be reflective of the number of years a chiropractor has been in clinical practice⁷ or the educational institution where s/he received training⁸.

Even if granted limited prescriptive authority (i.e., limited to prescribing non-steroidal anti-inflammatory drugs [NSAIDs], analgesics, and muscle relaxants), evidence suggests chiropractors could have a positive influence on

outr, l'élargissement du champ de pratique et la fréquence de prescription chez les chiropraticiens suisses seront étudiés à l'aide d'un questionnaire comprenant 13 questions. Le recrutement sera effectué par courriel et tous les membres de l'Association suisse chiropratique pourront participer à l'étude. Les données seront analysées par une analyse de facteurs personnels et par statistique descriptive.

Discussion : Il s'agira de la première mise à jour nationale sur les attitudes des chiropraticiens suisses à l'égard de leur droit de prescrire des médicaments depuis 2003, et la première étude à utiliser la méthode Q. Les résultats sont importants car ils permettront d'éclairer les orientations et les recherches futures sur le droit de prescrire des chiropraticiens.

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MOTS CLÉS : chiropratique, attitudes, croyances, prescription de médicaments, Suisse, méthode Q

public health.² Arguably, with such privileges, chiropractors would be in a position to help patients with musculoskeletal (MSK) pain avoid overusing or over-relying on medications commonly prescribed by general practitioners to treat their condition. For example, with limited prescription rights, chiropractors could recommend more conservative first-line treatment options such as manipulation, exercise, education, and possibly short-term use of non-opioid analgesics or simple NSAIDs, hence reducing the consumption of opioid analgesic medication. In fact, chiropractors in Switzerland can already prescribe from a limited formulary of muscle relaxants, anti-inflammatories, and analgesics, and studies have shown they exercise judicious use of prescribing in clinical practice.^{5,9,10} In one study, Swiss chiropractors were shown to prescribe medications less frequently than requested by their patients.⁵ Despite this, the clinical circumstances under which Swiss chiropractors prescribe medications are largely unknown. Rates of prescribing medications for MSK conditions across the Swiss chiropractic profession have also not been rigorously assessed.

The purpose of this study is to assess Swiss chiropractors' current attitudes and beliefs toward, and frequency

of, medication prescribing for MSK conditions in clinical practice. Clinicians and health policy makers could use the results of this assessment to inform potential chiropractic prescribing practices in their jurisdictions. The results of this survey are timely since reports indicate that a growing number of chiropractors from countries outside Switzerland are also interested in expanding their scopes of practice to include similar prescription privileges.^{7,8,11-16}

Research Questions

1. What are the current attitudes of Swiss chiropractors toward using prescription medications for MSK conditions?
2. What indications do Swiss chiropractors use when prescribing medications for MSK conditions in clinical practice?
3. How frequently do Swiss chiropractors prescribe medications for MSK conditions in clinical practice?
4. What are Swiss chiropractors' beliefs toward the adequacy of their current pharmacology training for prescribing medications?
5. Are Swiss chiropractors interested in expanding the range of current medications available to prescribe for MSK or non-MSK conditions?

Methods

Study Design

We will conduct a cross-sectional study of chiropractors across Switzerland and employ a Q-methodological approach to address the aforementioned research questions.^{17,18} The study will be conducted in two phases. First, we will develop a study instrument, or Q-sort table^{17,18} (Figure 1), and pair it with a demographic questionnaire (Appendix 1). Second, these two instruments will be employed to collect data. The instruments will be developed in English because the target population is able to communicate well in this language.

Q-Methodology

Q-methodology was first introduced by William Stephenson in 1935.^{19,20} Although used sporadically since its inception, Q-methodology has recently become a more widely utilized and accepted research method, in large part due to advances in statistical analysis techniques and the development of new analytical software programs.^{17,18,21}

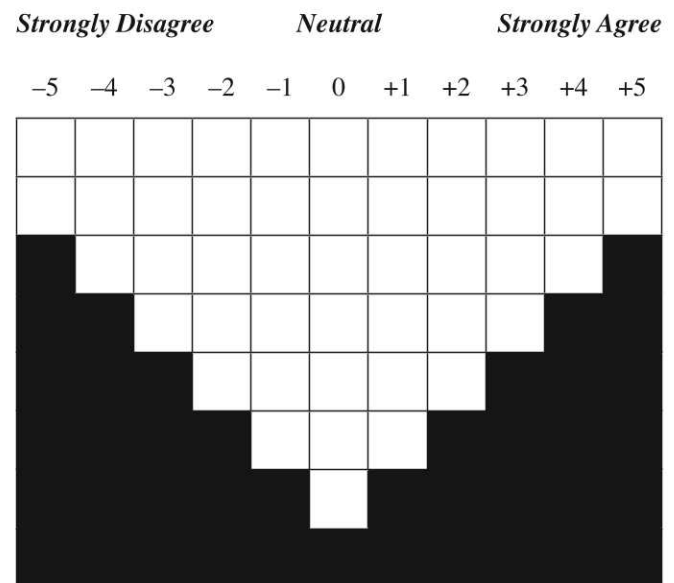


Figure 1.
Example of a Q-sort table for rank-ordering Q-sample statements. This particular Q-sort has 47 spaces (or ranking positions), anchored from -5 to +5, and is designed to be used with a set of 47 statements.

Q-methodology combines qualitative and quantitative methodologies and is a useful means of identifying alternate viewpoints, as well as commonly shared views or attitudes on a research topic.^{17,18} In practice, Q-methodology is employed to identify typologies of individuals within groups.¹⁸

Despite numerous chiropractic surveys on medication prescription rights internationally,^{1,6-8,16,22-24} there is still no consensus on this topic within the profession.^{1,2} Moreover, many of these surveys have been limited by low response rates,^{1,7,8,23,24} leaving their findings open to question. An important advantage of Q-methodology is that low response rates do not bias a study's results. This is because the primary objective of using Q-methodology is to identify the existence of one or more typologies (e.g., commonly shared views on a given topic) in a study population, not to test the typology's proportional distribution in that or other populations.^{17,25} As such, Q-methodology can be a useful alternative to traditional quantitative sur-

vey methods when elucidating chiropractors' attitudes toward prescribing medications.

To date, Q-methodology has been used in many health-related research disciplines, including psychology²⁶, health economics²⁷, nursing^{17,28}, social work²⁹, palliative medicine³⁰, occupational therapy³¹, disability research³², public policy analysis³³, and attitudinal research^{34,35}. However, Q-methodology has not yet been used for research within the chiropractic profession. For a more complete review and practical guide about Q-methodology and its use, we refer readers to the paper by Akhtar-Danesh *et al.*¹⁷

Population

All active registered members of the Swiss Chiropractic Association (ChiroSuisse³⁶) will be eligible to participate. ChiroSuisse is Switzerland's national chiropractic association and represents more than 98% of all practising chiropractors in the country.^{9,36} ChiroSuisse has agreed to support the study as described in 'Recruitment' below.

Recruitment

To recruit participants for this study, an information letter containing electronic links to the survey will be disseminated from the administrative offices of ChiroSuisse, via e-mail, to all ChiroSuisse members. As per the Dillman method³⁷, this will be preceded by a notification letter, sent one week prior to the start of the survey, followed by three reminder notifications, sent one week, two weeks and then four weeks apart, for a total of five survey contacts. There will be no financial compensation or reimbursement for participation. However, the association will reward participants with one hour of continuing education (CE) credit for completing the questionnaires.

Sample Size

We require between 40 and 60 completed surveys to ensure that our sample size is sufficient for a Q-methodology study.¹⁷ What is of most interest are the factors (i.e., the key viewpoints held in common among the group) defined by at least four or five participants.^{17,18} A higher number of subjects per factor adds little additional value.^{17,38} However, our sampling frame will include the entire population of ChiroSuisse members ($n = 286$).³⁶ In this case, because we are including the whole population, the expected sample size will be large enough to address

our main objectives. Previous research utilizing e-mail recruitment of Swiss chiropractors suggests we can expect a response proportion of 0.70 or more.^{5,9} In the event the response proportion is lower, we will assess possible threats to internal validity by comparing the demographic characteristics (i.e., age, gender, school of graduation, region and number of years in practice) of respondents to the characteristics of all ChiroSuisse members.

Phase 1. Instrument Development

The Concourse

In this phase, we will recruit a purposive sample of 30 ChiroSuisse members to develop a comprehensive list of statements (i.e., the concourse) that broadly represents the viewpoints of Swiss chiropractors regarding attitudes and beliefs toward prescribing medications for MSK conditions.^{17,18} To represent the two most populous regions of Switzerland, 15 of the 30 invited chiropractors will be from the German-speaking region of the country, and the remaining 15 will be from the French-speaking region. Two study investigators (TAWH, MW), who are also ChiroSuisse members, will invite their colleagues to participate in this stage of instrument development.

Each chiropractor will be asked to provide 10 statements describing their personal experiences with prescribing medications in clinical practice. In line with previous literature on the topic,^{1,4,5,9,10} participants will be encouraged to provide statements around the following three themes: (i) attitudes toward using prescription medications for MSK conditions, (ii) beliefs regarding the adequacy of their current pharmacology training for prescribing medications, and (iii) indications they use when prescribing medications for MSK conditions in clinical practice. Participants will be asked to return their 10 statements to TAWH and MW via e-mail, and a complete list of anonymized statements will then be provided to the lead author (PCE). Although there is no set number of required statements,¹⁷ the list should be comprehensive enough to cover all major aspects of the research topic. We will solicit additional items from a second purposive sample of ChiroSuisse members in the event there is a high non-response or incompleteness rate. The authors may add additional items to the compiled list of returned statements, informed from previous literature^{1,2,4,5,7-10,16} and their content expertise, and the final list of statements in the concourse

will then be consolidated into a Q-sample^{17,18}, as detailed below. Examples of possible statements to be used in the final Q study instrument are presented in Table 1.

The Q-Sample

Using a structured approach,¹⁸ two of the authors, including a Q-methodologist (NAD) and a chiropractor (PCE) with content expertise in the subject area, will categorize the statements under the three aforementioned themes. The lead author (PCE) will review each item in the concourse list, and statements corresponding with attitudes to medication prescription privileges, beliefs regarding pharmacology training, or indications for prescribing will be grouped within these respective themes. An inductive approach¹⁷ will then be used to identify any additional themes or sub-themes from the remaining statements, and these items will be categorized accordingly. The structured concourse will be reviewed by a second author (NAD), and disagreements regarding themes, sub-themes, and categorized statements will be resolved through discussion to achieve consensus. A third reviewer (TAWH) will adjudicate as necessary.

The categorized statements will be reviewed for similarities and differences by the three authors using a similar process as described above. Repetitive statements will be deleted and disagreements will be resolved through consensus. The review process will continue in this manner through multiple rounds until a more consolidated list of statements is achieved.^{17,18} Statements that are distinct, concise, and representative of the major themes will be chosen for the final Q-sample. While too few statements would provide inadequate coverage of the topic, too many would burden participants when completing the Q-sorting process.¹⁸ In most Q-methodology studies, a Q-sample of between 40 and 80 statements, with at least five or six statements covering aspects of each major theme, is generally recommended.¹⁸ This list will represent all of the key conceptual and emerging themes about Swiss chiropractors' attitudes and beliefs toward prescribing medications for MSK conditions. The statements will then be randomly numbered from one to the total number of Q-sample statements.

The Q-Sort Table

After assembling the final Q-sample, a grid or Q-sort table will be developed.^{17,18} The number of cells to be

Table 1.
Examples of statements to be used in the Q study instrument.

Statement
I think medications are a useful addition to chiropractic practice.
I believe medications do not belong to chiropractic practice.
I am pleased with the current prescription rights in Switzerland.
I think adding new drug classes (opioids) to our prescription rights would be useful.
I feel that medication prescription rights give chiropractors better credibility among their medical colleagues.
I think medication prescribed by chiropractors is not appreciated by general practitioners.

placed in the Q-sort table will be equal to the number of statements in the Q-sample (see Figure 1). The Q-sort table will consist of empty cells or boxes, arranged in rows and columns of differing lengths, resembling the shape of a quasi-normal distribution. As shown in Figure 1, anchors of -5 (least agree or most disagree) and +5 (most agree) will be assigned to the extreme scores of the Q-sort table. The precise range to be used for the Q-sort table anchors in the current study will depend on the total number of statements included in the final Q-sample. In general, anchor ranges of between -4 to +4 and -6 to +6 are recommended for Q-samples of ≤ 40 items and ≥ 60 items, respectively.^{18,38} The columns between the anchors will then be numbered sequentially, moving in from the anchors toward the middle column, which is given a scale step label of zero.

To measure attitudes and beliefs, we will ask participants to rank order^{17,18} the Q-sample list of statements about medication prescribing for MSK conditions based on the extent to which they agree or disagree with each statement. A description of the rank-ordering process is provided in Phase 2 below. We will pilot test the Q-sort table and statements by having two Swiss chiropractors review the study materials and work through the Q-sorting process and assign the statements to the Q-sort table. This process will be conducted to achieve content validity, as well as clarity and readability.^{17,39} Face validity will be promoted by using ChiroSuisse participants' exact word-

ing of their concurrence statements, with slight editing for grammar and comprehension.¹⁷ The test-retest reliability of the Q-sorting process has been shown to be 0.80 or higher in various contexts.¹⁷

Phase 2. Data Collection

ChiroSuisse administration will disseminate electronic links to the data collection instruments to all ChiroSuisse members via an e-mail information letter. The first instrument will implement the Q-methodology using a freely downloadable app (i.e., Lloyd's Q Sort Tool [www.nowheroad.com/qsort/]). The second instrument will be a demographic questionnaire administered through SurveyMonkey (www.surveymonkey.com). For the Q study, a set of instructions will be available to explain the process to participants.

The Q-sort table will be completed by each participant independently. Participants will be asked to read the list of statements and then place each statement into an empty cell corresponding with the amount of agreement they have with each statement. The Q-sort table, as presented in Figure 1, is constructed in a prearranged 'forced-choice' frequency distribution,¹⁸ such that only two statements can be placed under -5 and two under +5; three statements can be placed under -4 and three under +4; four statements can be placed under -3 and +3, and so on; and the highest number of statements (e.g., seven, in this case) can be placed under the central column, 0. Any statement placed under a negative number on the Q-sort table will indicate disagreement (or less agreement), and any statement placed under a positive number will indicate agreement. Participants will be instructed to sort the statements in this manner until all cells on the Q-sort table are filled.^{17,18}

In addition to the Q-sort table, and after each participant's Q-sorting process is complete, the final Q study instrument will include three open-ended questions asking participants about why they sorted the items in the manner in which they did. For example, participants will be asked to respond to the following three questions: 1) Please explain why you chose those particular statements for your highest ratings; 2) Please explain why you chose those particular statements for your lowest ratings; and 3) Please provide any other comments you wish to help explain your thinking when completing this Q sort. The purpose of these questions will be to explore each par-

ticipant's wider understanding of the topic, as well as to elucidate the meaning of the items to the participant, particularly those placed at the extremes of the distribution. Participants will then be asked one final Likert-style question about their general attitude towards the topic. For instance, participants will be asked to rate their level of agreement with the following statement: "I think that medication prescription privileges are an advantage for the chiropractic profession in Switzerland."

For the demographic questionnaire, participants will be asked to report their age, sex, chiropractic school of graduation, number of years in practice, region of practice, postgraduate qualifications (if any), and type of practice (e.g., solo, multidisciplinary, or hospital-based). In addition, there will be five items asking participants about frequency of medication prescribing and scope of practice (see Appendix 1). We will use complete case analysis to address missing data. For example, any incomplete Q-sort tables will be excluded from the Q-methodology analysis. Demographic questionnaires with more than 10% missing data (i.e., ≥ 2 items) will also be omitted.⁴⁰

Data Analysis

We will generate frequencies for all collected data from the demographic questionnaire (including proportions for categorical data, means and standard deviations for normally distributed continuous data, and medians and inter-quartile ranges for non-normally distributed continuous data) and compare responders with non-responders using chi-squared and t-tests (or Fisher's exact and Wilcoxon-Mann-Whitney tests when appropriate). All data and comparative analyses will be performed using Stata²¹ and the statistical significance level (α) for quantitative analyses will be 0.05.

For the Q-methodology analysis, a by-person factor analysis^{17,18} of the completed Q-sorts will be used to investigate salient viewpoints, as well as shared viewpoints, among participants. The statistical analysis in a by-person factor analysis is performed by person rather than by variable, trait, or statement. Therefore, each completed Q-sort represents one person's point of view on the topic of study, and each group (or factor) represents individuals with similar viewpoints, feelings, or experiences about the topic. If an individual significantly loads ($p \leq 0.05$) on a particular factor, they are then counted as a member of that group. In essence, all respondents who load on

Table 2.

Summary of measurement variables and data collection methods to be used in this study. (GP = general practitioner)

Variables	Data Collection Method
Attitudes toward current prescription privileges	Q-methodology
Beliefs about current pharmacology training	Q-methodology
Indications used for prescribing	Q-methodology
Interest in expanding current formulary	Questionnaire (binary, yes/no)
Frequency of prescribing	Questionnaire (% , open-ended)
Number of years in practice	Questionnaire (years, open-ended)
School of graduation	Questionnaire (school, multiple choice)
Scope of practice (i.e., hospital-based practice, daily collaboration with GPs)	Questionnaire (binary, yes/no)

one factor constitute a group of like-minded individuals. A summary of the measurement variables and data collection methods to be used for this study are listed in Table 2.

Participants' demographic information and written comments obtained in the survey will be triangulated to their completed Q-sort data to aid in factor interpretation.¹⁸ For instance, relationships between factors and demographic variables (i.e., age, sex, number of years in practice, chiropractic school of graduation, postgraduate qualifications, frequency of prescribing, and scope of practice) will be explored using chi-squared and one-way analysis of variance (ANOVA) tests (or Fisher's exact and Kruskal-Wallis tests as appropriate). Similar to previous research,⁸ chiropractic school of graduation will be dichotomized into two groups: (i) 'American' (i.e., graduates from chiropractic programs within the United States) and (ii) 'non-American' (i.e., including graduates from programs in Europe, Canada, or elsewhere), in order to explore differences in attitudes, beliefs, and practices (if any) toward medication prescription between the two groups. Pertinent comments provided by significantly loading participants will also be presented alongside factor scores and distinguishing statements using a weaving narrative approach.¹⁸

Factor Extraction and Rotation

We will use the qfactor command in Stata²¹ for our factor-extraction and factor-rotation procedures. In Q-methodology, two of the most commonly used techniques for factor extraction include the principal component method and the centroid method.^{17,18} A more recently developed factor-extraction method, the principal axis factor method,

is also available to users in Stata.²¹ The main difference between these three methods is that the variance of factor loadings is maximized in the principal component method, the average of the loadings is maximized in the centroid method, and the sum of squares of the loadings (i.e., the communality) is maximized in the principal axis factor method. Although all three factor-extraction methods have been shown to produce similar results,^{18,39} we will use the principal axis factor method because it allows for greater data exploration and interpretability, particularly for theoretical purposes.^{18,21,41} In Q-methodology, a factor is usually considered significant if it has an eigenvalue (or Kaiser-Guttman criterion) of greater than one.^{17,18}

For factor rotation, two common techniques used in Q-methodology include varimax and manual (or theoretical) rotation.^{17,18,41,42} Because unrotated factors typically are not meaningful or easily interpretable, factor-rotation methods are used to identify factors with more simple structures, allowing for easier interpretation.^{17,18,41,42} Furthermore, manual rotation is normally used when there is a theoretical framework for the underlying factors. As we are interested in current attitudes and beliefs toward medication prescribing for MSK conditions among Swiss chiropractors, and this is the first study of its kind where there is no relevant pre-determined theory or hypothesis in the Q-methodology literature, we will use an exploratory approach with varimax rotation.

Following factor extraction and factor rotation, a weighted (or synthetic) Q-sort will be produced for each rotated factor by using a weighted averaging method to

calculate the score for each statement for that factor.^{18,25} These scores will be calculated as normalized z scores, and then converted to within the bounds of the aforementioned Q-sort anchor range (i.e., -5 to +5). For instance, the two statements with the highest z scores will be awarded a ranking of +5, the next three highest will be ranked at +4, and so on; and the pair of statements with the lowest z scores will be ranked at -5. Each factor will then be assigned a name that reflects the factor configuration. Names are typically assigned to each factor based on the factor's distinguishing statements,^{17,18} which are statements that score statistically significantly different on that factor compared with any of the other factors. We will calculate Cohen's d for each factor-factor pair to identify distinguishing statements.^{21,43} Because we expect there to be general consensus among the majority of ChiroSuisse members regarding viewpoints toward statements related to their existing medication prescription privileges,^{1,4,5,9} we will use a Cohen's medium effect size of 0.5. For this study, the lead investigators (PCE, NAD) will meet to interpret and name the factors.

Ethical Considerations

In this study, the identified risks to participating Swiss chiropractors are deemed minimal. The greatest risk to participants is anonymity. The only other identifiable disadvantage of taking part in this study will be the time involved in completing the survey questionnaires. To minimize and manage these risks, all survey data collected for this study will be confidential and stored securely in a password protected electronic database. Consent to participate will be implied upon completion of the survey questionnaires.

Participants will be asked to provide their full name (first and last) when initially signing in to the Q study. This information will be kept confidential, as only the lead authors (PCE, NAD) will have access to these names. Participants will be asked to provide a non-identifying username if they wish to keep their responses anonymous from other participants in the group. Participants will also complete a demographic questionnaire on SurveyMonkey. For comparative purposes, each participant's name from the Q study will be matched to their corresponding name used in completing the demographic questionnaire. A list of names of ChiroSuisse members who completed both the Q study and demographic questionnaire will be

created, and this will be sent to ChiroSuisse for the purposes of awarding CE credit.

This study has received ethical approval from the Hamilton Integrated Research Ethics Board at McMaster University (approval number 2019-7612). Local approval in Switzerland was also obtained from the Swiss Cantonal Ethics Commission (approval number 2019-00926).

Discussion

This will be the first national study of chiropractors in Switzerland on attitudes, beliefs, and practices regarding medication prescription for MSK conditions conducted since the year 2000.⁴ In the previous national study of Swiss chiropractors by Robert,⁴ 61% of respondents indicated prescribing MSK medications to patients in clinical practice. Eighty-two percent felt that limited prescribing rights were an advantage for the Swiss chiropractic profession, and 76% wanted to see these privileges extended to include additional analgesic and muscle relaxant medications.⁴ The chiropractic formulary in Switzerland was recently extended in January 2018.⁴⁴ As such, the current study will provide an update on Swiss chiropractors' attitudes toward these privileges. In addition, it will be the first such study to inquire about attitudes toward prescribing additional MSK (e.g., opioid) and non-MSK medications, as well as indications for prescribing, and the first to do so using Q-methodology.^{17,18}

Because Swiss chiropractors share primary care status with general practitioners,^{9,10} the results of the current study may also have future implications warranting further investigation. For instance, prior to this study, the role of "medication counselling"⁵ will not have been explored across the Swiss chiropractic profession. In only one small pilot study,⁵ from Bern, Switzerland, have chiropractors been queried about their ability to reduce medication use among patients with MSK conditions. If practiced across the chiropractic profession, such a role could very well have public health implications in light of the growing opioid crisis in Switzerland⁴⁵ and elsewhere^{46,47}. The assumption is that the more 'conservative' prescribing attitudes of chiropractors, relative to medical doctors, might help mitigate the overprescribing of opioids for MSK conditions. Indeed, the expanded set of results from the current study will be of interest to stakeholders within and outside the profession. However, outside of Switzerland, there is still controversy over medication prescribing

ing among chiropractors who are not currently licensed to use this modality within the profession. For instance, a common argument against prescribing rights in the profession internationally is that chiropractic clinicians have inadequate training in pharmacology.^{1,2} There is also concern that, with prescription privileges, chiropractors will stop using spinal manipulation to treat their patients.^{1,2} Therefore, because the results of this research project will be obtained directly from chiropractic clinicians with experience in prescribing pharmaceuticals, the findings will inform the discourse on whether other jurisdictions should extend prescribing rights to chiropractors.

Limitations

A limitation of this study is that two separate instruments will be utilized for data collection. Moreover, participants will be required to download an app prior to completing the Q-sort table. It may also take participants between 30 to 60 minutes to complete the Q-sort table, depending on the total number of included Q-sample statements.¹⁷ These limitations will increase the level of participant burden and result in potential recruitment and completion challenges. However, as described in the methods above, we will employ the Dillman method³⁷ to increase the response proportion. Dillman's method contains a host of procedures designed to increase the attractiveness of responding to surveys, including the type and frequency of reminders, layout of surveys, and the wording to use in contacts with prospective participants.³⁷ Dillman initially developed his methods for mail surveys, and later revised and adapted them for internet surveys.

Knowledge Translation

The results of this study will be made public through a peer-reviewed publication, oral conference presentation at the ChiroSuisse Annual General Conference to be held on September 10-12, 2020 in Lugano, Switzerland, as well as through other invited or accepted conference presentations. Aside from academic presentations, we will provide a summary of the study results to ChiroSuisse members. We will also approach the World Federation of Chiropractic, and offer to present our findings to their member associations via webinar format.

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Appendix 1. *Demographic questionnaire.*

Swiss Chiropractic Q-Methodology Study. Demographics and Scope of Practice

- 1) What is your age? _____
 - 2) What is your gender? ☐ Female
☐ Male
 - 3) What chiropractic school did you graduate from?
 - ☐ Anglo-European College of Chiropractic (AECC University College)
 - ☐ Canadian Memorial Chiropractic College
 - ☐ Cleveland Chiropractic College
 - ☐ Institut Franco-Européen de Chiropratique
 - ☐ Logan College of Chiropractic
 - ☐ Los Angeles College of Chiropractic, Southern California University of Health Sciences
 - ☐ National College of Chiropractic, National University of Health Sciences
 - ☐ New York Chiropractic College
 - ☐ Northwestern College of Chiropractic, Health Science University
 - ☐ Palmer College of Chiropractic
 - ☐ Palmer College of Chiropractic West
 - ☐ Syddansk Universitet Odense (University of Southern Denmark)
 - ☐ Texas Chiropractic College
 - ☐ Université de Québec à Trois Rivières, Département de chiropratique
 - ☐ University of Zürich, Faculty of Medicine
 - ☐ Welsh Institute of Chiropractic, University of South Wales
 - ☐ Western States Chiropractic College
 - ☐ Other: _____
 - 4) In which region do you practice/work as a chiropractor?
 - ☐ Swiss-German
 - ☐ Swiss-French
 - ☐ Swiss-Italian
 - 5) How many years have you been a chiropractor? _____
-

- 6) Do you have any postgraduate university degrees outside of the usual chiropractic qualifications (e.g., PGCert/PGDip, MSc, PhD)?
☐ Yes ☐ No
- 7) Do you work in a multidisciplinary practice/hospital setting?
☐ Yes ☐ No
- 8) Do you collaborate with other medical professionals (e.g., GP and/or specialists) **on a daily basis**?
☐ Yes ☐ No
- 9) How often do you prescribe **analgesic** medications to patients in clinical practice?
_____ % of patients
- 10) How often do you prescribe **non-steroidal anti-inflammatory (NSAID)** medications to patients in clinical practice?
_____ % of patients
- 11) How often do you prescribe **muscle relaxant** medications to patients in clinical practice?
_____ % of patients
- 12) Are you interested in expanding the current formulary to include additional classes of medication for treating **musculoskeletal** conditions (e.g., opioids, corticosteroids)?
☐ Yes ☐ No
- 13) Are you interested in expanding the current formulary to include additional medications for treating **non-musculoskeletal** conditions (e.g., antibiotics, anti-hypertensives, anti-depressants, etc.)?
☐ Yes ☐ No
-