Abstract

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In this sub-study of the OPTICA study we interviewed a total of eight general practitioners, who used the STRIP assistant, a tool that tries to optimize patient's medication based on medical diagnoses, medications, laboratory values and vital data. All of this data is taken into consideration to produce a new treatment plan, which the general practitioner can follow, partly follow or decline. The STRIP assistant tries to encounter undertreatment, ineffective treatment, overtreatment, potential adverse effects, contraindications or interactions and dose adjustments.

Since the STRIP assistant is relatively new and was tested in a theoretical setting before, the aim of this sub-study was to elaborate how general practitioners experienced the use of the STRIP assistant and what barriers and facilitators there are.
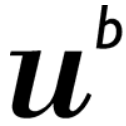
The conducted interviews were transcribed, coded and later analysed. The main results are discussed in this paper and include preparation, everyday suitability, recommendations and outlook.

Talking about preparation for the STRIP assistant, general practitioners were generally satisfied with the information material and videos provided to them. However, some stated that it took too long to work through everything and it could be shortened.

The STRIP assistant was appreciated for its intuitive interface, but criticized for the data import, which sometimes was lacking information and had to be completed by hand. Another wish addressed the integration into pre-existing software, so changing from one window to another would become obsolete. Overall, the STRIP assistant was more advanced and complex than any other system the general practitioners had used before.

The recommendations produced were partly criticized for being outdated, so regular updates seem to be a must. Others wished for more individualisation, meaning recommendations should have a manual turn-off function. However, many general practitioners reported that they implemented some of the recommendations because they were regarded as reasonable. They further added that those recommendations, which they did not implement, caused a critical self-review on their work and can be seen as an indirect positive influence.

Overall, the idea behind the STRIP assistant was regarded as promising and with some adjustments can be part of the future in Swiss primary health care practices.

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**UNIVERSITÄT
BERN**

Master Thesis

Awarding the academic title of
Master of Medicine (M Med)

A qualitative analysis of the use of the 'Systematic Tool to Reduce Inappropriate Prescribing' (STRIP) Assistant in Swiss Primary Health Care Practices

Master Thesis submitted by
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Immatriculation Nr. 16.705.803
Handed in 14th of April 2021

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1. Introduction

Switzerland is home to around 1'640'000 people aged 65 or older, making the population one of the oldest in the world.[1] This number of seniors is expected to grow massively to over 2'670'000 by the year of 2050.[1] Higher age is linked directly to multimorbidity and therefore, polypharmacy.[2] 50.4% of the Swiss population over 65 years qualifies for patients with polypharmacy.[3] If we look at residents in old people homes this percentage rises to 85.5%.[3] The definitions on polypharmacy are diverse. The most commonly used definition is a numerical approach, that defines polypharmacy as an intake of at least 5 different medications by one patient.[4] The risk of interactions between the different medications increases as the number of drugs heightens.[5] A higher number of drugs also relates to more frequent inappropriate medications and higher potential prescribing omissions.[6] This inappropriate prescribing can cause adverse drug reactions.

Adverse drug reactions can be described as "an appreciably harmful or unpleasant reaction resulting from an intervention related to the use of a medicinal product".[7] Main risk factors for adverse drug reactions in elderly people are increased comorbid complexity and increased number of medications.[8] These adverse drug reactions are a significant cause of morbidity and mortality, often resulting in emergency hospitalisations. Data from Australia shows that adverse drug reactions account for up to 30% of all hospitalisations in the age group 75+.[9] At least half of them could have been prevented.[9]

If we look at the causes for adverse drug affects, drug-drug interactions are common challenges. Data from Jordan shows, that potential drug-drug interactions can be found in 96% of patients with polypharmacy.[10] Furthermore, underprescribing and overdosage are risk factors for inappropriate prescribing and consequently adverse drug events.[11] Therefore, there is a strong desire to optimize medication, especially in the growing group of older, multimorbid people. Hence, some sort of assistance in form of electronical decision support tools would come in handy.

In order to achieve an appropriate treatment for patients, many hospitals and general practitioner practices nowadays use an electronical medical history. This often includes a drug-drug interaction check, which is either set off automatically or manually. Additional support tools are currently developed and integrated, but clinical use of electronic clinical decision support tools is still limited.[12] Reasons for this limitation are lack of experience with such tools, lacking communications to clinicians about the use and benefit or unsatisfying utility.[12]

One of these clinical decision support tools is the Systematic Tool to Reduce Inappropriate Prescribing (STRIP), developed in the Netherlands.[13] It consists of six steps and aims to

optimize the medication of a patient and erase potentially inappropriate prescriptions. The first step is linked to the drug history of the patient. This can be taken over by data transfer of a pre-existing data base. The following step allows the general practitioner to adjust the values from the data base or add new values. In step 3 the general practitioner links each medication to a diagnosis. This leads to a new treatment plan (step 4). The general practitioner then has to decide whether he follows, follows partly or declines the recommendations. Step 5 is taking the patients preferences into consideration and with the help of shared decision making coming to an enhanced medical treatment. The last step is follow-up and monitoring.[13] Step 4 is utterly important because it is the main factor in optimising the medication. It tries to encounter undertreatment, ineffective treatment, overtreatment, potential adverse effects, contraindications or interactions, and dose adjustments. For that reason a study from the Netherlands tested step 4 in last-year medical students and found out, that students working with the STRIP assistant made 34% more correct decisions and produced 30% fewer potentially harmful decisions.[14]

These results are promising, but were conducted in a theoretical setting. So far, there is no evidence that they are reproducible in a real-world setting. Optimising PharmacoTherapy In the multimorbid elderly in primary CAre (OPTICA) is a Swiss study using the STRIP assistant in Swiss general medicine.[15] In this context, the goal was to determine if not only medical students, but professional general practitioners could profit from the STRIP assistant. In this sub-study we would primarily focus on the handling of the STRIP assistant and how general practitioners handled it. This led to the following research questions: How did general practitioners experience the use of the STRIP assistant during the OPTICA trial? What are the perceived barriers and facilitators to the use of the STRIP assistant among Swiss general practitioners?

2. Methods

2.1. Study design

The study was designed as a qualitative sub-study of the Optimizing PharmacoTherapy In the multimorbid elderly in primary CAre (OPTICA) Study, which is conducted at the Institute of Primary Care (BIHAM) at the University of Bern (Principal investigator: Prof. Sven Streit, MD, MSc, PhD). The OPTICA Study itself aims "to determine if a systematic software-based medication review improves medication appropriateness more than standard care in older, multimorbid patients with polypharmacy."[15] It was originally designed as a cluster randomized trial including 43 general practitioners with a total of 323 study participants. These were divided into two groups, an intervention group and a control group. The intervention group was using the Systematic Tool to Reduce Inappropriate Prescribing-Assistant (STRIP assistant), an

online tool developed by Utrecht University and the University Medical Center Utrecht.[13] It includes medical diagnoses, medications, laboratory values and vital data in order to generate recommendations for the general practitioners, which may include advice concerning overprescribing, underprescribing, contraindications and side effects.

The OPTICA Study's primarily objective was "to test whether the use of a systematic, software-assisted medication review intervention leads to a more appropriate use of medications than an usual care sham intervention."[15] The numerous secondary objectives included the examining of the implementation of the STRIP assistant. This study is integrated in a mixed-methods sub-study to the OPTICA trial, with the aim to evaluate the use of the STRIP assistant during the OPTICA trial.

2.2. Study participants

A total of eight general practitioners, who took part in the OPTICA trial, agreed to an extended interview for this sub-study. In order to be eligible for the OPTICA trial, general practitioners had to be part of the "Family medicine ICPC Research using Electronic medical records (FIRE)" project by the Institute of Primary Care of the University of Zurich. The goal of the FIRE project is to establish a database in general medicine using electronic medical records of general practitioners. The database is used for scientific research, but furthermore allows participants to evaluate their work.[16]

2.3. Data collection

In the first phase of the sub-study, we elaborated an interview guide for the semi structured interviews. Semi-structured means that there was an interview guide, but the interviewer had the possibility to switch freely from one question to another depending on which subject was approached by the general practitioner.[17] A three-pieced pattern was considered most appropriate for the interview guide. The interview guide covered the major topics a) overall attitude of general practitioners in dealing with elderly, multimorbid patients, b) the implementation of the Systematic Tool to Reduce Inappropriate Prescribing (STRIP) assistant and c) their view on clinical decision support tools. You can find the full interview guide in the appendix 9.1. of this thesis. This thesis will focus on factors related to the implementation of the STRIP assistant during the OPTICA trial.

After having completed all the preparation work, general practitioners were contacted by KTJ and were kindly asked if they would be available for a voluntary interview. Those who agreed were then called by phone to arrange a meeting at their practices. Eight general practitioners were visited at their practice, scattered all over German-speaking Switzerland (in cantons

Bern, Solothurn, Zurich, Zug, Aargau, Lucerne) for the interviews. The interviews (N=8) took on average around 20-25 minutes, sometimes lasting longer or shorter depending on how excessively general practitioners wanted to state their points. After completing the interview, all general practitioners provided written informed consent to participate in this research.

After having conducted and recorded the interviews, they were transcribed ad verbatim from Swiss German to High German using the f5 Transcription PRO (Version 7.0.1), which resulted in eight text documents each around 2'000 to 3'000 words long.

2.4. Data analysis

We used thematic analysis as defined by Braun & Clark[18], which is a popular method for analysing qualitative data by identifying common themes within a dataset. In this study, we used thematic analysis to identify the relevant themes mentioned by the general practitioners. Braun & Clarke provide a six-phase guide on how to structure the analysis.[19] These steps are not strictly linear, but allow to switch back and forth if necessary. Starting with phase 1 includes digging into the data and familiarize oneself. In Step 2 initial codes are searched, which later should group our pieces of the interviews. Following this, significant parts of the data is collected and ordered in themes. In Step 4 the themes are reviewed and potentially modified and adjusted. The finalization of the themes is done in Step 5. The last step is about writing up the extracted.[20] Gale's Framework Method[21] was used to structure the analysis and to help us organize the coded data into meaningful themes.

After heaving read the interview transcripts and knowing the data, FS and KTJ developed a coding scheme. Codes can be thought of as tags, who describe the topic/essence of a text passage and who can be applied to interview transcripts. A total of 38 codes (see appendix 9.2), each belonging to one of the major topics used in the interview guide, figured in the coding scheme. Additionally, tags related to the topic "Optimization of drugs" were added due to the frequent mentioning of information related to this topic by general practitioners. The coding scheme was tested by FS and KTJ on the first interviews and slightly adapted. The coding of the interview transcripts was supported by the software TAMS-Analyzer (Version 4.49b5ahEC), which allowed to assign the codes to the interview transcripts. Furthermore, this software allowed us to group similar text passages which were assigned the same code by generating a matrix, consisting of the 38 codes and their corresponding text passages from the interview transcripts. This helped us in the process of identifying meaningful themes that will be discussed in this thesis. FS worked on identifying the relevant themes and this work was reviewed independently by KTJ. Quotes from interviews which are presented in this thesis were translated into English.

2.5.   Ethical approval

The ethics committee of the canton of Bern in Switzerland approved the trial protocol, including this sub-study. All general practitioners participating in this study provided informed consent.

3.   Results

The interviews with the participating general practitioners resulted in a large amount of information and feedback. The sheer quantity makes it impossible to talk about every detail mentioned in the interviews. In the following results section, we would therefore like to focus on the points that seemed most important to us in order to answer our research questions.

3.1.   Preparation

The preparation can be divided into the information material provided beforehand and the actual preparation of the STRIP assistant. The information material consisting of videos and text material was generally regarded as useful and self-explaining. The general practitioners further described the material as easily understandable, but a little elongated in extend. This magnitude of information was mentioned by several general practitioners, causing hours to work through the material. "*A little instructive*" was the feedback of a middle-aged, male general practitioner. He concluded with a statement, which is generally true and also impacted the preparation in this study: "*The problem is, that if you do not use it right away and become active, you'll forget.*"

Talking about the preparation of the STRIP assistant, general practitioners often reported difficulties with the tool itself. Medical data was not always completely transferred from the FIRE database. This caused time-consuming correction by hand. Furthermore, some had to re-code their patients' diagnoses because they were not imported.

3.2.   Everyday suitability

In order to achieve an end product that is useful in Swiss general medicine, general practitioners were asked on how the STRIP assistant currently fits into their everyday work process. The common impression was satisfactory, one 50-year old doctor stated: "*the different steps of the analysis, recommendations for overprescribing, for underprescribing, interactions. That is relatively intuitive.*" Another general practitioner expressed his disappointment with the everyday suitability like this: "*Concerning the practicability I was frustrated, because the data transfer worked poorly.*" Despite the mostly good impression, most general practitioners see room for improvement. Future improvements would need to be targeted specifically to general medicine in order to produce a full-functioning tool for this

setting. This includes mainly technical difficulties, e.g. data transfer, integration of the STRIP assistant into practice software.

The expectations of the participating general practitioners were another topic discussed in order to find out how the STRIP assistant could fit into their daily work. Expectations of general practitioners could only be met in few cases, most of them appreciated the STRIP assistant and how it worked, but expected even more beforehand. One of the disillusioned general practitioners said: "*I was disappointed. I expected more, I did not benefit much from the STRIP assistant intervention.*" The general practitioner later explained, that there was just few new information. Most of the STRIP assistant's advice seemed self-explanatory to him. Although most of them agreed, that they never worked with a system at the complexity of the STRIP assistant, most would have wanted it to work more fluently. However, there were also positive comments, such as this statement by one of the general practitioners: "*I think he took laboratory values into consideration and produced new recommendations, based on the list of diagnosis. That was new, I did not know that until now.*"

3.3.   Recommendations

An important part of the STRIP assistant intervention were the recommendations that were produced, based on the data provided in advance. The quality of these recommendations does fundamentally impact the value of the STRIP assistant intervention.

When discussing the quality of the recommendations, the feedback provided by the general practitioners was split. One group perceived that the feedback to their work was supporting, may it be as a direct improvement in the medical treatment by implementing the recommendation or as a warning sign to overthink their previous prescribing decisions. Multiple general practitioners mentioned, that they did not implement all recommendations, but questioned their earlier decisions thanks to the recommendation. A middle-aged, male general practitioner stated the following: "*The recommendations, if I look at them now, were good suggestions. I was happy, that the medication was not questioned in general. Otherwise, I would had to doubt the quality of my work*." So the recommendations, or rather the lack of recommendations, can be seen as a confirmation of their work as well.

However, not all general practitioners were as happy as the one above. Some stated that there were poor medical recommendations, which were not up to date to the latest scientific research. Another point of criticism was that the STRIP assistant did not know the medication used well enough, sometimes missing the fact that a drug had several active ingredients. One general practitioner located the problem for that in the lacking data: "*there were no good*

recommendations from my point of view because the system did not have the correct data, and did not know the diagnosis in that detail, it would thus require to justify a drug". Another point, which was mentioned by several participants, was the wish for more courageous recommendations. The general practitioners felt that the STRIP assistant and his recommendations were too conservative and narrow-minded. "*He sticks to evident things and does nothing such as gut decisions*" said one general practitioner working in an urban setting.

A frequently discussed object was the suitability of recommendations. To what extent should the STRIP assistant make recommendations? Most of the general practitioners who addressed this topic would wish for some manual regulation on whether all possible recommendations should be presented or not. This was mainly a theme because general practitioners received recommendations that they were aware of, but ignored deliberately beforehand, may it be a drug with potential for interaction or an unusual dosage. Another frequently mentioned point was the flu vaccine. The majority of general practitioners does not add the vaccine to the long-term medication of the patient. Therefore, the STRIP assistant produced lots of recommendations for the flu vaccine throughout the whole year, which many general practitioners criticized for being redundant. They argued, that they are aware of that in autumn and do not need to be remembered all through the year.

Not all of the general practitioners implemented recommendations created by the STRIP assistant. Those who did not, often explained that they were not fully convinced by the STRIP assistant recommendation and did not agree that this adaptation would improve the patient's well-being. On the other hand, there were general practitioners who did implement STRIP assistant-produced recommendations. For further information on how many recommendations were implemented, view the manuscript "A Mixed Methods Analysis of the Use of the 'Systematic Tool to Reduce Inappropriate Prescribing' (STRIP) in Swiss Primary Care Practices" by KTJ et al.

3.4. Outlook

We ended the interviews with a discussion about the future of the STRIP assistant and support tools in general. Most of the general practitioners believe in a more technological future for general medicine, not always to their delight. They agree that products like the STRIP assistant will be part of this future, but will remain a supporting tool for the general practitioner and should not dictate or replace his/her decisions. Furthermore, they repeated their belief that such tools will have to be more user-friendly in order to gain broad acceptance. "*I think, if the STRIP assistant wants to have a chance to be used, it needs to work a lot smarter, right? It needs an*

interface that works. And works properly. This is cumbersome (to achieve) (…), but if the time consumption is that high, it has no chance to be used" (male, mid-50).

For the future of the STRIP assistant one general practitioner stated the following: "*I hope, that a tool can be produced out of the STRIP assistant, (a tool) that is user-friendly and helps making every day work safer*".

4. Discussion

As written above, the preparation for the STRIP assistant was regarded as satisfying, but could be shortened if possible. One deficit in this area was the insufficient data import of the FIRE Data. In regards of the everyday suitability, general practitioners were happy with the intuitive user interface, but argue there needs to be done more in order to make it worth using. In terms of recommendations we received a divided feedback. Some appreciated the recommendations produced, others expressed their rejection. One common wish was that the STRIP assistant keeps up with latest medical guidelines. Furthermore, general practitioners stated, that the STRIP assistant should remain an assistant to them and not replace them completely.

Most of the general practitioners liked the preparation material given to them beforehand, because it explained the process step by step in an appropriate manner. However, some of them gave us the feedback that it took too long to work through it and then to prepare it for the intervention. If we look at other users of the STRIP assistant, we can find data which shows us that others had a rather long mean time investment of 90-120 minutes as well.[22] One general practitioner stated, that by using it more often, he adapted quickly and could speed up the use of the STRIP assistant. We therefore can expect that by using the software regularly, general practitioners will get used to it quickly and time consumption will drop rapidly.

In other studies, there is evidence that effectiveness of clinical decision support tools is lost when additional data input is needed.[23] This correlates with our feedback from general practitioners, who stated that the FIRE intersection was crucial for the intervention. In cases, in which not all data was imported, general practitioners often called this one of the biggest disadvantages of the system. This underlines the importance of properly working intersections.

Because medication optimization is not only a linear process along guidelines, but also an individual decision, it makes it hard for the STRIP assistant to produce recommendations which fit every general practitioner. We received feedback, that some general practitioners only implemented some, or even none, of the recommendations. Data from three Dutch residential care organizations shows, that in other trials with the STRIP assistant only 15.7% of the

recommendations were fully or partially implemented.[22] KTJ will have a closer look at our exact findings in her paper. In order to achieve a high acceptance for the recommendations it will be vital to update the STRIP assistant with latest medical expertise on a regular bases.[23] Furthermore, general practitioners expressed their wish for more individualisation, including a switch-off function for unwanted recommendations. To sum up, there is some room for improvement in this segment and it seems vital to face those challenges in order to improve acceptance among general practitioners. However, there are other limitations for implementation that are hard to alter, including patient's opinions.

So widespread acceptance can not only be accomplished by improving the STRIP assistant. General practitioners and their patients need to be informed about the benefits and limitations of the tool, so their understanding rises and they can follow or decline the recommendations based on a deep understanding on the matter.

5.   Strengths and Limitations

The reader should bear in mind that this sub-study is based on the personal opinion of eight general practitioners, all of whom were male and aged above 45. Furthermore, all of them were located in German-speaking areas of Switzerland. This limits the significance in other regions of Switzerland and does not allow to state a general opinion for all general practitioners. However, representativeness is not a primary goal in qualitative research.

The qualitative approach in this study, however, allowed a deep insight into the use of the STRIP assistant during the trial, which would be hard to achieve in a quantitative study.

6.   Conclusion

General practitioners were generally satisfied with the preparation and education of the STRIP assistant. Time consumptions for preparation and implementation was regarded as too high, but regular use is believed to lead to a reduction. In terms of recommendations the split feedback shows that there is room for improvement. Wishes from general practitioners included a switch-off function for certain recommendations and frequent updates for the STRIP assistant. Overall, the STRIP assistant and similar decision support tools are believed to be part of general medicine's future, but will need to work smoother in order to gain broad acceptance.

7.   References

1.   BAG. Szenarien zur Bevölkerungsentwicklung der Schweiz und der Kantone 2020-2050. 2020.

2.   Braun B. Polypharmazie - Eine Analyse mit hkk-Routinedaten. 2017.

3.   Schneider R, Schuler N, Reinau D, Schwenkglenks M, Meier C. Helsana Arzneimittelreport. 2017;

4.   Masnoon N, Shakib S, Kalisch-Ellett L, Caughey GE. What is polypharmacy? A systematic review of definitions. BMC Geriatr [Internet] 2017;17(1):230. Available from: https://doi.org/10.1186/s12877-017-0621-2

5.   Krähenbühl S. Polypharmazie im Alter. PrimaryCare 2012;6(48).

6.   Eckardt R, Steinhagen-Thiessen E, Kämpfe S, Buchmann N. Polypharmazie und Arzneimitteltherapiesicherheit im Alter. Z Gerontol Geriatr [Internet] 2013;47(4):293. Available from: https://doi.org/10.1007/s00391-013-0562-0

7.   Coleman JJ, Pontefract SK. Adverse drug reactions. Clin Med 2016;16(5):481–5.

8.   Alhawassi TM, Krass I, Bajorek B V, Pont LG. A systematic review of the prevalence and risk factors for adverse drug reactions in the elderly in the acute care setting. Clin Interv Aging 2014;9:2079–86.

9.   Chan M, Nicklason F, Vial JH. Adverse drug events as a cause of hospital admission in the elderly. Intern Med J [Internet] 2001;31(4):199–205. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1046/j.1445-5994.2001.00044.x

10.   Nusair MB, Al-Azzam SI, Arabyat RM, Amawi HA, Alzoubi KH, Rabah AA. The prevalence and severity of potential drug-drug interactions among adult polypharmacy patients at outpatient clinics in Jordan. Saudi Pharm J [Internet] 2020;28(2):155–60. Available from: http://www.sciencedirect.com/science/article/pii/S1319016419301562

11.   Chau SH, Jansen APD, van de Ven PM, Hoogland P, Elders PJM, Hugtenburg JG. Clinical medication reviews in elderly patients with polypharmacy: a cross-sectional study on drug-related problems in the Netherlands. Int J Clin Pharm 2016;38(1):46–53.

12.   Mould DR, D'Haens G, Upton RN. Clinical Decision Support Tools: The Evolution of a Revolution. Clin Pharmacol Ther [Internet] 2016;99(4):405–18. Available from: https://ascpt.onlinelibrary.wiley.com/doi/abs/10.1002/cpt.334

13.   Drenth-van Maanen AC, Leendertse AJ, Jansen PAF, et al. The Systematic Tool to Reduce Inappropriate Prescribing (STRIP): Combining implicit and explicit prescribing tools to improve appropriate prescribing. J Eval Clin Pract 2018;24(2):317–22.

14. Keijsers CJPW, van Doorn ABD, van Kalles A, et al. Structured pharmaceutical analysis of the Systematic Tool to Reduce Inappropriate Prescribing is an effective method for final-year medical students to improve polypharmacy skills: a randomized controlled trial. J Am Geriatr Soc 2014;62(7):1353–9.

15. Jungo KT, Rozsnyai Z, Mantelli S, et al. "Optimising PharmacoTherapy in the multimorbid elderly in primary CAre" (OPTICA) to improve medication appropriateness: Study protocol of a cluster randomised controlled trial. BMJ Open 2019;9(9):1–12.

16. Rosemann T, Senn O. Das FIRE-Projekt [Internet]. 2018 [cited 2020 Dec 29];Available from: https://www.hausarztmedizin.uzh.ch/de/fire2.html

17. Kielmann K, Cataldo F, Seeley J. Introduction to Qualitative Research Methodology: A Training Manual. 2012;

18. Braun V, Clarke V. What can "thematic analysis" offer health and wellbeing researchers? Int. J. Qual. Stud. Health Well-being. 2014;9:26152.

19. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol 2006;3:77–101.

20. Maguire M, Delahunt B. Doing a thematic analysis: A practical, step-by-step guide for learning and teaching scholars. 2017.

21. Gale NK, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. BMC Med Res Methodol 2013;13:117.

22. Zaal RJ, Ebbers S, Borms M, et al. Medication review using a Systematic Tool to Reduce Inappropriate Prescribing (STRIP) in adults with an intellectual disability: A pilot study. Res Dev Disabil [Internet] 2016;55:132–42. Available from: https://www.sciencedirect.com/science/article/pii/S0891422216300543

23. Beeler PE, Bates DW, Hug BL. Clinical decision support systems. Swiss Med Wkly 2014;144:w14073.

8.   Declaration of Authorship

„I herewith confirm that I wrote this thesis without external help and that I did not use any resources other than those indicated.

I have clearly acknowledged all parts of the text where material from other sources has been used, either verbatim or paraphrased. I am aware that non-compliance with the above statement may lead to withdrawal of the academic title granted on the basis of this master's thesis by the Senate, according to the law governing the University of Bern."

Bern, 14. 4. 2021

Date and Signature of Student

9.   Appendix

9.1.   Interview-Guide

Interview-Leitfaden für STRIP-Assistent-Befragung

Mein Name ist … und ich bin Forschungsassistent am Berner Institut für Hausarztmedizin.

Herzlichen Dank im Voraus für Ihre Bereitschaft zu diesem Interview, in dem es darum geht Ihre Erfahrungen mit dem STRIP Assistenten zu diskutieren. Ich werde Sie am Anfang des Interviews um mündliche Zusage bitten, die Formalitäten auf Papier können wir dann am Ende des Interviews durchführen.

Für die Vorbereitung dieses Fragebogens haben wir die Informationen, die uns die Hausärztinnen und Hausärzte der Interventionsgruppe auf REDCap gegeben haben, einfliessen lassen.

Ich möchte Sie noch einmal darauf hinweisen, dass Ihre Teilnahme an diesem Interview freiwillig ist. Die Informationen, die aus diesem Interview herauskommen werden vertraulich behandelt und Ihre Anonymität wird gewährleistet. Für unsere Aufarbeitung der Daten wäre ich froh, wenn ich dieses Gespräch aufzeichnen dürfte. Ginge dies für Sie in Ordnung? *(Wenn ja, Aufnahmegerät einschalten)*

Nun können wir mit dem Interview beginnen.

(Tonaufnahme mit folgendem Text beginnen) Es ist (Datum/Uhrzeit). Ich bin hier bei Dr. (Name) in der Praxis im (Ort). Habe ich Ihre Erlaubnis dieses Interview durchzuführen und aufzunehmen? *(Antwort abwarten)*

Ich möchte damit beginnen Ihnen ein paar Fragen zu Ihrem Praxisalltag mit älteren Patienten mit mehreren chronischen Erkrankungen und mehreren Medikamenten sowie Ihrer Bereitschaft zur Veränderung von medikamentösen Therapien zu stellen.

Einleitungsfragen

Übliche Behandlung multimorbider Patienten mit Polypharmazie

Wie oft pro Woche sehen sie ältere Patienten über 65 Jahren mit Polypharmazie, also 5 oder mehr regelmässig eingenommenen Medikamenten, und Multimorbidität, also 3 oder mehr chronischen Erkrankungen, in Ihrem Praxisalltag?

Probe: Welchen Anteil Ihrer Patienten macht diese Patientengruppe schätzungsweise aus?

Können Sie diese Patienten beschreiben?

Probe: Haben Sie Beispiele für Ihre Merkmale? Besonderheiten?

Können Sie eine typische Konsultation mit so einem Patienten beschreiben? Haben Sie ein Beispiel?

Probes:

Wie regelmässig sehen Sie solche Patienten?

Verwenden Sie Hilfsmittel, die Ihnen bei der Behandlung dieser Patienten helfen und können Sie beschreiben wie Sie diese verwenden?

Treffen Sie auf Schwierigkeiten, wenn Sie diese Patienten behandeln? Haben Sie Beispiele hierfür?

Übliche Medikamentenoptimierung

Wie gehen Sie normalerweise Veränderungen in der medikamentösen Behandlung Ihrer multimorbiden Patienten mit Polypharmazie an?

Wie würden Sie Ihre Bereitschaft Medikamente in dieser Patientengruppe zu verändern beschreiben? Inwiefern würden Sie die Medikamente verändern wollen?

Probes (für beide Fragen oben):

Welche Faktoren helfen Ihnen bei der Optimierung der Medikamente dieser Patientengruppe?

Auf welche Hindernisse treffen Sie in diesem Prozess?

Wie sieht die Rolle des Patienten in diesem Prozess aus?

Rolle des Hausarztes/der Hausärztin

Wie sehen Sie Ihre eigene Rolle in der Versorgung eines solchen Patienten?

Probe: Was ist für Sie die grösste Schwierigkeit was Ihre Rolle angeht?

Wie könnten Sie als Hausarzt/als Hausärztin bei der Behandlung dieser Patientengruppe besser unterstützt werden?

Probes:

Haben Sie eine konkrete Idee oder einen Verbesserungsvorschlag?

Wie könnte Ihre elektronische Krankengeschichte adaptiert werden, um Sie bei der Behandlung dieser Patientengruppe zu unterstützen?

Dieser erste Teil des Interviews über Ihre Bereitschaft Medikamente zu verändern ist nun abgeschlossen, insofern Sie keine weiteren Anmerkungen haben. *(Pause)*

Nun möchte ich mich mit Ihnen über Ihren Gebrauch der STRIPA Intervention unterhalten. Wir haben bereits einen Blick in die Daten geworfen, die Sie und die anderen Hausärzte in der REDCap Studiendatenbank zur Intervention eingegeben haben.

STRIPA Intervention

Erfahrung mit ähnlichen Hilfsmitteln

Kennen sie bereits Hilfsmittel, die dem STRIP Assistenten ähneln? Wenn ja, welche? Haben Sie sie bereits genutzt?

Welche Probleme oder positive Faktoren gab es bei der Verwendung dieser Hilfsmittel?

Inwiefern unterscheiden sich diese Hilfsmittel vom STRIP Assistenten?

Können Sie mir beschreiben wie der STRIP Assistent funktioniert?

Probes:

Was wissen Sie über die STOPP/START Kriterien?

Haben Sie diese bereits in Ihrem Praxisalltag verwendet?

Vorbereitung der Intervention

Haben Sie das Informationsmaterial zum STRIP Assistenten, nämlich das Video und die schriftlichen Instruktionen, genutzt? Wenn ja, wieviel Zeit hat dies gekostet?

Können Sie Ihren Eindruck zu den Informationsmaterialen (Video und Anleitung) zum STRIP Assistenten erläutern?

Wir haben in der REDCap Studiendatenbank gesehen, dass das Vorbereiten und Durchführen der Intervention pro Patient 40 Minuten gedauert hat.. Wie sieht das im Vergleich zu Ihren Erfahrungen aus?

Probe: Können Sie sich erklären warum manche Hausärzte 15 Minuten und andere bis 60 Minuten gebraucht haben.

Nutzung des STRIP Assistenten

Wir haben gesehen, dass im Allgemeinen 23% der STRIPA-Empfehlungen den Patienten vorgestellt wurden, 7% wurden den Patienten nicht vorgestellt, bei 70% wissen wir es nicht. Überrascht Sie diese Information? Warum ja/warum nicht?

Probes:

Wie würden Sie die Qualität der STRIPA-Empfehlungen einschätzen?

Inwiefern waren die Empfehlungen sinnvoll für Ihre Patienten?

*Wir haben in unseren Daten festgestellt, das 13% der vorgestellten Empfehlungen schlussendlich umgesetzt wurden. **10% dieser Empfehlungen wurden nicht umgesetzt. Bei 77% wissen wir es nicht.*** Überrascht Sie diese Zahl? Warum ja/warum nicht?

Probes:

Wie wurde die Empfehlung vom STRIP Assistenten von Ihren Patienten aufgenommen?

(nur falls Empfehlungen umgesetzt wurden) Wir haben gesehen, dass die gemeinsame Entscheidungsfindung zwischen Hausarzt / Hausärztin durchschnittlich 8 Minuten gedauert hat. Inwiefern konnten Sie die gemeinsame Entscheidungsfindung mit Ihren Patienten durchführen?

Welchen Problemen sind Sie hierbei begegnet?

Was hat diese Entscheidungsfindung vereinfacht?

Inwiefern wurden Ihre Erwartungen an den STRIP Assistenten erfüllt?

Probes:

Hat der STRIP Assistent Ihre Behandlung älterer multimorbider Patienten mit Polypharmazie verändert? Wenn ja, inwiefern?

Können Sie mir schildern welche Aspekte Ihnen an der Nutzung der STRIP Assistenten gut gefallen hat und welche weniger? Wo gibt es Verbesserungsbedarf?

Wie fällt Ihr Fazit zum STRIP Assistent im Vergleich zu Ihrer vorherig genutzten Praxis aus?

Würden sie die STRIP-Software weiterhin in Ihrer Praxis verwenden? Warum ja/warum nein?

Bei welchem Schritt der Verwendung des STRIP Assistenten sehen Sie die grössten Schwierigkeiten? Und bei welchem das grösste Potential?

Nun haben wir den Teil über den STRIP Assistenten beendet. Haben Sie noch Anmerkungen?

Nun möchte ich zum abschliessenden Teil übergehen in dem ich Ihnen ein paar Fragen zum generellen Gebrauch solcher Hilfsmittel stellen möchte, unabhängig von Ihrer Erfahrung mit dem STRIP Assistenten.

Implementierung 'Clinical decision support tools'/elektronische Entscheidungshilfen:

Vor- und Nachteile

Welche Vorteile sehen Sie in der Nutzung von STRIP oder einem ähnlichen Hilfsmittel, unter der Voraussetzung, dass es einwandfrei funktioniert? Welche Nachteile gibt es Ihrer Meinung nach?

Gebrauch im Praxisalltag

Unter welchen Bedingungen wären Sie bereit den Gebrauch eines solchen Hilfsmittels in Ihren Praxisalltag zu integrieren?

Probe: Wären Sie bereit einen jährlichen Preis für die Nutzung des STRIP Assistenten zu bezahlen? Warum ja/ warum nein?

Ihrer Meinung nach, inwiefern sollten solche Tools in ihre elektronische Krankengeschichte integriert werden?

Welchen Einfluss kann die Nutzung einer elektronischen Entscheidungshilfe Ihrer Meinung nach auf den Praxisalltag von Hausärztinnen und Hausärzten haben?

Wirkung auf Patienten-Outcomes

Inwiefern denken Sie, dass der Gebrauch von elektronischen Entscheidungshilfen, wie dem STRIP Assistenten, einen Einfluss auf Patienten haben kann?

Probe: Welche Patienten-Outcomes wären wohl am meisten betroffen?

Zukunft von elektronischen Entscheidungshilfen in der Schweizer Hausarztmedizin

Wie sehen sie die Zukunft solcher elektronischer Entscheidungshilfen in der Schweizer Hausarztmedizin?

Wie würden Sie den STRIP Assistent oder ähnliche Hilfsmittel in der Schweiz implementieren?

Probes:

Wie würden Sie vorgehen damit das Tool die notwendige Unterstützung der Hausärzteschaft für die Implementierung erhält?

Haben Sie noch Anmerkungen zur Implementierung von elektronischen Entscheidungshilfen?

Nun komme ich zum Ende des Interviews.

Abschluss

Gibt es etwas das wir bereits besprochen haben, Sie jedoch noch klären/präzisieren möchten?

Gibt es noch offene Anregungen, welche Sie uns gerne mitteilen möchten?

Gibt es irgendetwas, was wir noch nicht besprochen haben, Sie jedoch relevant für dieses Thema finden?

Hier habe ich noch die Einverständniserklärung, die es vor dem Interview zu unterzeichnen gibt. Bitte lesen Sie sie sich kurz durch. Bitte zögern Sie nicht mir Fragen zu stellen, falls es Unklarheiten gibt. *(Warten)*

Herzlichen Dank für Ihre Zeit und Ihre Bereitschaft bei dieser Studie mitzumachen. Wir schätzen dies sehr. Auf Wiedersehen.

9.2. Code-Book

IMPL_Bedingungen

IMPL_Einstellung_des_Hausarztes

IMPL_Erwartungshaltung

IMPL_Konsequenzen_für_Hausarzt

IMPL_Konsequenzen_für_Patienten

IMPL_positive_Faktoren

IMPL_Schwierigkeiten

IMPL_technische_Aspekte

IMPL_Zukunft

MO_Anderes

MO_Bereitschaft_Hausarzt

MO_Bereitschaft_Patient

MO_Deprescribing

MO_Hindernisse

MO_Kommunikation

MO_Vorgehensweise

MPP_Anderes

MPP_Bereitschaft_für_Veränderungen

MPP_Eigenschaften

MPP_Kollaboration_mit_anderen_Gesundheitsberufen

MPP_Kommunikation

MPP_Konsultation_Behandlung

MPP_Prävalenz

MPP_Rolle_des_Hausarztes

STRIPA_Alltagstauglichkeit

STRIPA_andere_Hilfsmittel

STRIPA_anderes

STRIPA_Durchführung

STRIPA_Empfehlungen_Qualität_etc

STRIPA_Erwartungen

STRIPA_positive_Aspekte

STRIPA_Schwierigkeiten

STRIPA_Shared_decision_making

STRIPA_technische_Aspekte

STRIPA_Umsetzung_der_Empfehlungen

STRIPA_Verbesserungspotential

STRIPA_Vorbereitung

STRIPA_Zeitaufwand