

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Improving community pharmacists' clinical knowledge to detect and resolve drug-related problems in Croatia: a before/after survey study investigating the efficacy of an educational intervention
AUTHORS	Zekan, Lovre; Mestrovic, Arijana; Perisin, Ana; Bukic, Josipa; Leskur, Dario; Rusic, Doris; Modun, Darko

VERSION 1 - REVIEW

REVIEWER	Amir Sarayani University of Florida, USA
REVIEW RETURNED	26-Oct-2019

GENERAL COMMENTS	<p>Thank you for inviting me to provide comments on this manuscript. The authors have conducted a pre/post study to evaluate the efficacy of an educational intervention to improve knowledge of community pharmacists about drug-related problems. I would use the word "effectiveness" as the study was small and only looked at knowledge outcome not the practice or health outcome levels. Although not having a control group is a concern, however, the short duration of intervention may mitigate concerns about external factors influencing the knowledge level.</p> <p>Although the literature on the effect of educational interventions to improve knowledge in healthcare professionals are not sparse and several reports exist in the literature, the magnitude of effect could be context-dependent. The study population were practicing in Croatia and it would be useful to provide more details about pharmacy training and practice in Croatia.</p> <p>Another strength of the study the validated measure of knowledge. Please confirm that this validation was conducted in Croatia as well. I would like to know the learning objectives of the workshop to see whether they mapped to the assessment tool (i.e. pharmacists were trained on what they were supposed to be assessed on). The trainers were introduced as "a pharmacist and pharmacologist". I wonder if they had formal clinical pharmacy training or not. Please clarify.</p> <p>There are some frameworks in continuing education (CE) literature that discuss levels of outcome assessment in educational interventions. Please consult with them and report what levels of knowledge you measured (declarative knowledge, procedural knowledge...).</p> <p>Please clarify why both dependent and independent t-test was used. The methods section would benefit from having clear subsection</p>
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	<p>titles.</p> <p>How did you make sure that the pharmacists attended the meeting for the total amount of time and gained the full exposure? Also, please clarify whether a lecture hall was used to deliver the content or you had facilitators and small-group teaching methods?</p> <p>Despite a 3-day workshop and 20 hours of training, the magnitude of knowledge improvement appears to be small compared to other studies and my own studies looking at one-day educational interventions for pharmacists and nurses. Please compare the magnitude of effect you have observed with other estimates available in the literature. Also, reaffirm the level of outcome that you have measured in the studies.</p>
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REVIEWER	Jean-Venable R. Goode Virginia Commonwealth University, USA
REVIEW RETURNED	25-Nov-2019

GENERAL COMMENTS	<p>General Comments</p> <p>Overall, interesting study. There are some inconsistencies throughout that need to be corrected and some grammar that could be fixed. The methods with description of the educational intervention and the discussion needs to be revised.</p> <p>Title: ok</p> <p>Abstract:</p> <p>Objectives: The objective section presents a background but not the study objectives</p> <p>Outcome Measure: The information presented in the abstract is different than what is presented in the manuscript (Page 8, lines 163-164)</p> <p>Results: Seem to be presented incorrectly in the abstract as mean survey score but actually the mean score difference was presented in parentheses.</p> <p>Conclusions: Do authors know based on the participant demographics that there was a lack of previous training or education – seems the authors are just assuming.</p> <p>Introduction</p> <p>Page 4, lines 70-72 awkward sentence, then in next sentence discuss knowledge along with clinical skills but sentence before only addresses knowledge and training.</p> <p>Page 4, lines 78-80 need a reference</p> <p>Page 4, lines 83-86. A little more context here would be important. What types of courses and how it did not seem that the study [11] cited for the last sentence in the paragraph supported the information that the majority of practicing pharmacists did not attend these course.</p> <p>Page 5, lines 91-94 this seems to be out of place and the reference is specific to cholesterol. Suggest reworking this paragraph.</p> <p>Page 5, paragraph 3, sentence 2 and 3, this should be first in paragraph. Then the first sentence starting with Hence.</p> <p>Page 5, line 100-102. Delete this sentence.</p> <p>Methods:</p> <p>Recommend adding your study objectives. Since the intervention is the educational program, perhaps a table with the curriculum, content and number of hours for each topic area would be helpful. Also characterizing the teaching methods for each topic area would be important information. It is stated on page 6 paragraph 2 that different teaching methods were incorporated but how much and for</p>
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	<p>each topic.</p> <p>Page 6, lines 119-121 – the tense is off</p> <p>Page 6, lines 123-125, authors discuss one of the learning objectives from the educational program. What were the others.</p> <p>Page 7, lines 137-139, this sentence should probably be first when describing the tool that you used in the context that you had used it before.</p> <p>Page 7, lines 147-149. Authors do not discuss in results if any pharmacists who participated in the training were excluded from the survey due to having previously completed.</p> <p>Page 8, lines 163-165. As mentioned this is a different outcome than stated in the abstract.</p> <p>Results</p> <p>It is not clear if the t(number) represents the n used for the analysis. If so, then there is missing data from the 88 in all of the comparisons the authors list.</p> <p>Line 176-177, this sentence is written poorly</p> <p>Discussion</p> <p>Authors do not discuss why the overall scores were much lower than when used in other studies. Also, authors do not discuss how relevant the DRP's in Australia on the survey related to the DRPs in Croatia. Also not discussed if the developers of the education program were familiar with the survey and the DRPs. Authors also do not discuss how any prior training may have impacted knowledge, they cite a study that trained pharmacists in Croatia [11 and 12]</p> <p>Page 10, lines 201-203. Authors state the intervention was short but yet occurred over 3 days which the pharmacists had to take off to attend? So maybe not short enough if only 4% of pharmacists attended?</p> <p>Page 10, lines 205-210, this seems like it should go at the end of the discussion section with future research</p> <p>Page 11, lines 211-219. Authors basically describe other literature but do not discuss how it relates to their findings. For example the study by Kimberlin and colleagues really had all the same components plus a 3 month follow-up how do their findings correlate with yours and how are they similar or different.</p> <p>Page 11, lines 220-227. Authors should further discuss how the different evaluations could have impacted the difference in the results.</p> <p>Page 11, lines 228-231. Could the reason there was not a significant increase for the male scores was due to the low numbers and inability to show significance?</p> <p>Page 12, lines 241-243, not sure why this sentence is referenced.</p> <p>Page 12, lines 251-253. Authors use the word “short” and compare to multiple studies did all the studies have the same 20 hour “short” workshop?</p> <p>Figure 1. Ok</p>
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VERSION 1 – AUTHOR RESPONSE

Responses to Reviewer's comments:

Reviewer #1:

1) Reviewer: “Thank you for inviting me to provide comments on this manuscript. The authors have conducted a pre/post study to evaluate the efficacy of an educational intervention to improve knowledge of community pharmacists about drug-related problems. I would use

the word “effectiveness” as the study was small and only looked at knowledge outcome not the practice or health outcome levels. Although not having a control group is a concern, however, the short duration of intervention may mitigate concerns about external factors influencing the knowledge level.”

Answer: Thank you for your review and for helpful comments. The word effectiveness was used instead of word impact, as suggested. Title: Improving community pharmacists’ clinical knowledge to detect and resolve drug-related problems in Croatia: a before/after survey study investigating the effectiveness of an educational intervention.

2) Reviewer: „ Although the literature on the effect of educational interventions to improve knowledge in healthcare professionals are not sparse and several reports exist in the literature, the magnitude of effect could be context-dependent. The study population were practicing in Croatia and it would be useful to provide more details about pharmacy training and practice in Croatia.,,

Answer: Suggestions fully accepted. Details about pharmacy training and practice were added to the revised Methods and Discussion sections accordingly: ...This finding indicated a general need for the improvement in the knowledge level of community pharmacists in Croatia. This was not an unexpected finding, since clinical pharmacy and pharmaceutical care models are still in the initial stages of development in Croatia. Firstly, Centre for Applied Pharmacy was established at the University of Zagreb Faculty of Pharmacy and Biochemistry in 2004. Afterwards, clinical pharmacy was the first subject to be introduced to the revised pharmacy curricula. Patient-oriented subjects such as pharmacotherapy, communication skills, pharmacy practice and pharmaceutical care were introduced between 2006 and 2009.¹² At that time, University of Zagreb Faculty of Pharmacy and Biochemistry was the only faculty for education of pharmacists in Croatia. Consequently, the majority of today’s practicing community pharmacists did not attend courses on these disciplines as a part of their graduate education due to the unavailability of such courses. Furthermore, the most of available education for licensed community pharmacists was aimed at promoting the products and consequently was without significant benefits to pharmacists’ knowledge about DRPs....

... As mentioned, this most probably arises from different educational backgrounds and different role of community pharmacists in healthcare systems.¹⁰ Community pharmacists in Croatia are still mostly oriented on traditional pharmacy services like dispensing and supplying of medicines, while additional services, which could expand their role as health care providers, are not available in practice. It is only in the last few years that work has begun to introduce advanced services, like medication review in pharmacy practice...

3) Reviewer: “Another strength of the study the validated measure of knowledge. Please confirm that this validation was conducted in Croatia as well. I would like to know the learning objectives of the workshop to see whether they mapped to the assessment tool (i.e.pharmacists were trained on what they were supposed to be assessed on).”

Answer: Survey was validated in Australia, and only verification has been carried out in Croatia. Since the same clinical cases with the same DRPs can be routinely found in Croatian community pharmacy practice, authors agreed that the survey was transferable and appropriate for use in Croatia. Survey was translated to Croatian, and to confirm the validity of translation, the back-translation from Croatian to English was carried out by a fluent English speaker and experienced biomedical scientist, blinded to the study details and the original wording. Afterwards, to verify the use of validated survey in Croatian setting, survey was administered to the pharmacy students at University of Split School of Medicine (first-fifth year), in similar manner as in original survey validation protocol, and results were consistent with the validation data.

Learning objectives and workshop curriculum are now included in revised Methods section:

“From 150 clinical cases, one of the most important learning objectives was increasing the knowledge through the identification and resolution of DRPs in the presented cases. Other learning objectives included developing skill of decision-making process in routine practice, priority assessment in pharmacotherapy and general introduction to the concept of pharmaceutical care.

Table 1. Curriculum of the workshop

Topic	Number of teaching hours	Main teaching method
Pharmaceutical care in practice	1	Formal lectures
Rational pharmacotherapy and drug-related problems	1	Formal lectures
Clinical pharmacy and evidence-based medicine	1	Formal lectures
Routine laboratory tests	1.5	Clinical case solving
Food and drug interactions	1	Clinical case solving
Pharmacokinetic and pharmacodynamic interactions	1	Clinical case solving
Hormone therapy	1.5	Clinical case solving
Psychotropic drugs and antidepressants	1.5	Clinical case solving
Antimicrobial drugs	1.5	Clinical case solving
Rare diseases	1.5	Clinical case solving
Hypertension and anticoagulants	1	Clinical case solving
Dyslipidemia and diabetes	1	Clinical case solving
Narrow therapeutic index drugs	1.5	Clinical case solving
Medication errors	2	Clinical case solving
Priority assessment in pharmacotherapy	2	Clinical case solving

“

4) Reviewer: „The trainers were introduced as “a pharmacist and pharmacologist”. I wonder if they had formal clinical pharmacy training or not. Please clarify.“

Answer: The details about the trainers’ education are now added in the revised Methods section accordingly: “A pharmacist and a pharmacologist were trainers who prepared and presented workshop materials and discussions. Both trainers have appropriate education and qualifications, for example the pharmacist is a competency development manager and lecturer of pharmaceutical care with a PhD and ambulatory care specialization from American College of Clinical Pharmacy and the pharmacologist is a professor of pharmacology and clinical pharmacy at University of Split School of Medicine.”

5) Reviewer: „There are some frameworks in continuing education (CE) literature that discuss levels of outcome assessment in educational interventions. Please consult with them and report what levels of knowledge you measured (declarative knowledge, procedural knowledge...).“

Answer: Thank you for suggestion. Methods section has been rewritten accordingly: „Each clinical case was supposed to assess a pharmacist’s ability to identify, resolve and evaluate a DRP. The survey was composed in a manner that all participants were asked to read short case scenarios and select how relevant, likely or appropriate they found each of the proposed statements using a seven-point Likert scale. In the first three clinical cases each statement was about additional information that would be relevant to acquire for that case, while the next three cases consisted of statements which described potential DRPs in each case and the final three cases consisted of statements about possible recommendations for the patients. Since the clinical cases were supposed to assess pharmacists’ ability to manage DRPs, the type of knowledge that was measured is mostly procedural knowledge, as it includes decision making and problem solving in routine practice. However, to be able effectively perform these procedures in practice, pharmacists’ procedural knowledge must be based on extensive declarative knowledge.“

6) Reviewer:” Please clarify why both dependent and independent t-test was used. The methods section would benefit from having clear subsection titles.)”

Answer: Suggestion fully accepted. The subsection titles have been added to the Methods section. Dependent (paired sample) t-test was used for all pre- and post- group comparisons, considering that the samples were the same group of participants and the only difference was the educational intervention. Independent sample t-test was used only for comparison between female and male pre-workshop survey score, given that the samples were two independent groups.

7) Reviewer: “How did you make sure that the pharmacists attended the meeting for the total amount of time and gained the full exposure? Also, please clarify whether a lecture hall was used to deliver the content or you had facilitators and small-group teaching methods?”

Answer: Pharmacists who didn’t attend the workshop for the total amount of time were excluded from the study. Lecture hall was used to deliver the content, however participants also actively participated in the workshop by solving the clinical cases. Education included both didactic and interactive elements. Clarification has been added to the revised Methods section. “The workshop was held in a lecture hall at University of Split School of Medicine with the help of assistants and pharmacy students. They supervised all participants during the workshop, and participants who did not attend all sessions were considered to have dropped out from the study...

...Furthermore, key elements of an effective educational activity, like formal lectures and interactive clinical case solving and exercises, were incorporated into the program. The workshop was designed to provide a brief overview about each topic, but then clinical cases were solved and discussed for the most of the workshop time. Cases were prepared according to the clinical case models available in the literature.^{21 22} By lifting the letter card, each participant had to answer for which of the 4 statements in each case he thought was the most correct. After all participants had revealed their answers, discussion on each statement followed...

8) Reviewer: “Despite a 3-day workshop and 20 hours of training, the magnitude of knowledge improvement appears to be small compared to other studies and my own studies looking at one-day educational interventions for pharmacists and nurses. Please compare the magnitude of effect you have observed with other estimates available in the literature. Also, reaffirm the level of outcome that you have measured in the studies.”

Answer: Thank you for constructive comments. Authors also agree that knowledge improvement might appear small compared to the other studies, however it might be difficult to compare studies with different outcome measures. Comparison between studies has been added to the revised

Discussion section accordingly: "From similar studies, Currie et al. proved that the intensive educational program in pharmaceutical care skills and implementation of these skills in practice successfully increased the rate of identified DRPs.²⁴ They used the 40-hour training program in two parts with the focus on the improvement of problem-solving and communication skills. Their training program did not include clinical pharmacy topics and was solely focused on pharmaceutical care. In addition, Currie et al. evaluated the impact of an educational intervention directly on patients and found that education of pharmacists in pharmaceutical care improves patient outcomes through identification of DRPs. Kimberlin et al. reported that pharmacists who engaged in an educational intervention program more likely assessed DRPs than pharmacists without the educational intervention and this difference held in the 3-month follow-up period.²⁵ Their training program included day-long workshop and home study using a training manual. Furthermore, they evaluated the effectiveness of an intervention by interviewing the patients which indicates better outcomes in routine pharmacy practice. In contrast to this study, results of Kimberlin et al. study are based on elderly patients. Furthermore, recently Lalonde et al. demonstrated that having provided community pharmacists with a short disease-specific training and essential clinical information successfully increased pharmacists' knowledge and clinical skills as well as reduced DRP frequency in community pharmacy practice.²⁶ Lalonde et al. used short 90-minute interactive web based training program on use of medications in chronic kidney disease. Pharmacists in their study completed self-administered questionnaire 12 months later, which showed that pharmacists improved knowledge by 4.5% and clinical skills by 7.4%. Compared to this study it is a smaller relative knowledge increase, however it is maintained a year after educational intervention. According to the Obreli-Neto et al., the majority of continuing education programs were reported to be effective based on the studies' outcome measures.²⁷ It is therefore difficult to compare study results without standardization of outcome measures. Also, studies with similar duration of the training and evaluation of participants reported heterogeneous relative knowledge increasement, that ranged from 19% to higher or even 5%, as satisfying.^{28 29}"

Reviewer #2:

1) Reviewer:

"Title: ok

Abstract:

Objectives: The objective section presents a background but not the study objectives

Outcome Measure: The information presented in the abstract is different than what is presented in the manuscript (Page 8, lines 163-164)

Results: Seem to be presented incorrectly in the abstract as mean survey score but actually the mean score difference was presented in parentheses.

Conclusions: Do authors know based on the participant demographics that there was a lack of previous training or education – seems the authors are just assuming."

Answer: Thank you for your review and for helpful comments. Suggestions fully accepted. Abstract has been rewritten accordingly: "Objectives: The aim of this study was to increase the knowledge level of community pharmacists in Croatia to identify and resolve drug-related problems (DRPs).

Design: Before/after survey study. Setting: University of Split School of Medicine. Participants: 115 community pharmacists from all over the Croatia. Interventions: An interactive three-day clinical pharmacy workshop with the goal of increasing the knowledge level of community pharmacists in Croatia to identify and resolve DRPs in routine practice. Teaching methods were based on interactive clinical case solving. Outcome measure: Change of the community pharmacists' knowledge based on pre- and post-workshop evaluation. Survey-based clinical knowledge measurement tool was used in order to evaluate the effectiveness of the workshop. The lowest possible total score was 0 and the highest was 80. A higher survey score indicates a higher level of clinical knowledge to identify and resolve DRPs. Results: Participating pharmacists had significantly higher post-workshop mean survey score (49.1 ± 8.0) than the pre-workshop mean survey score (42.9 ± 8.2), with the mean score

difference of 6.2 (95% CI: 4.3 to 8.1). Furthermore, it was found that community pharmacists significantly increased their survey scores, regardless of their age. Conclusions: Interactive and case-based clinical pharmacy workshop could be a valuable tool to increase the knowledge of community pharmacists about identification and management of DRPs in routine practice. However, further studies are necessary to evaluate the long-term knowledge maintenance and the improvement in patients' clinical outcomes."

2) Reviewer:

"Introduction

Page 4, lines 70-72 awkward sentence, then in next sentence discuss knowledge along with clinical skills but sentence before only addresses knowledge and training.

Page 4, lines 78-80 need a reference

Page 4, lines 83-86. A little more context here would be important. What types of courses and how it did not seem that the study [11] cited for the last sentence in the paragraph supported the information that the majority of practicing pharmacists did not attend these course.

Page 5, lines 91-94 this seems to be out of place and the reference is specific to cholesterol. Suggest reworking this paragraph.

Page 5, paragraph 3, sentence 2 and 3, this should be first in paragraph. Then the first sentence starting with Hence.

Page 5, line 100-102. Delete this sentence."

Answer: Suggestions fully accepted. The Introduction section has been rewritten accordingly: "Drug-related problems (DRPs) represent a public health problem, both in terms of patient outcomes and healthcare expenditures, as they can ultimately lead to drug-related complications, such as drug-related morbidity or mortality. Community pharmacists, as contributors to patient care, should assess data concerning untoward effects of drugs and be well skilled to recognize and prevent these drug-related complications, which result from unidentified or unresolved DRPs.^{1,2} The pharmaceutical care concept, as one of the pillars of modern pharmacy services, assumes clinical interventions which lead to optimal health outcomes. Identification, prevention or resolution of DRPs improves patient's health outcomes, and therefore it should be integrated within pharmaceutical care.^{3,4} However, community pharmacists must have the extensive clinical knowledge and the sufficient training in order to identify and resolve DRPs. Therefore, knowledge and training are important prerequisites to efficiently provide pharmaceutical care.⁵⁻⁹

In our previous study, it was suggested that the additional education of community pharmacists in Croatia is associated with the higher level of clinical knowledge to detect and resolve DRPs ($\beta = 0.272$, $P < 0.001$).¹⁰ It was concluded that the additional education could increase the community pharmacists' knowledge level and thus probably make pharmaceutical care implementation more effective. Furthermore, using the same knowledge measurement tool, it was found that community pharmacists from Australia compared to the colleagues from Croatia seem to have a higher level of clinical knowledge to detect and resolve DRPs.¹¹ This finding indicated a general need for the improvement in the knowledge level of community pharmacists in Croatia. This was not an unexpected finding, since clinical pharmacy and pharmaceutical care models are still in the initial stages of development in Croatia. Firstly, Centre for Applied Pharmacy was established at the University of Zagreb Faculty of Pharmacy and Biochemistry in 2004. Afterwards, clinical pharmacy was the first subject to be introduced to the revised pharmacy curricula. Patient-oriented subjects such as pharmacotherapy, communication skills, pharmacy practice and pharmaceutical care were introduced between 2006 and 2009.¹² At that time, University of Zagreb Faculty of Pharmacy and Biochemistry was the only faculty for education of pharmacists in Croatia. Consequently, the majority of today's practicing community pharmacists did not attend courses on these disciplines as a part of their graduate education due to the unavailability of such courses. Furthermore, the most of available education for licensed community pharmacists was aimed at promoting the products and consequently was without significant benefits to pharmacists' knowledge about DRPs.

Previously, Mestrovic et al. also identified that community pharmacists in Croatia lack skills in the areas of monitoring drug therapy, patient consultation and the evaluation of outcomes, and that they believe they need to complete supplemental educational programs to be able to efficiently provide pharmaceutical care.¹³

Therefore, there seems to be a need for an additional education programs that could fill the gap in community pharmacists' knowledge about DRPs, and presumably improve patients' health outcomes. Highly interactive and multifaceted learning methods, such as workshops are reported to be highly effective strategies to improve knowledge, professional practice and healthcare outcomes.¹⁵⁻¹⁸

Furthermore, continuing education programs in the form of an educational workshop have shown to improve community pharmacists' knowledge and clinical skills in practice.^{5 12 14 19 20} Hence, we planned an educational intervention in the form of a workshop with the goal of improving the clinical knowledge level of community pharmacists in Croatia.”

3) Reviewer:

“Methods:

Recommend adding your study objectives. Since the intervention is the educational program, perhaps a table with the curriculum, content and number of hours for each topic area would be helpful. Also characterizing the teaching methods for each topic area would be important information. It is stated on page 6 paragraph 2 that different teaching methods were incorporated but how much and for each topic.

Page 6, lines 119-121 – the tense is off

Page 6, lines 123-125, authors discuss one of the learning objectives from the educational program. What were the others.

Page 7, lines 137-139, this sentence should probably be first when describing the tool that you used in the context that you had used it before.

Page 7, lines 147-149. Authors do not discuss in results if any pharmacists who participated in the training were excluded from the survey due to having previously completed.

Page 8, lines 163-165. As mentioned this is a different outcome than stated in the abstract.”

Answer: Suggestions fully accepted. Table 1 now represents the curriculum of the workshop. Results section now includes the number of pharmacists who were excluded. Outcome in the abstract is now aligned. Methods section has been rewritten accordingly:

“Workshop setting

A three-day clinical pharmacy workshop for community pharmacists in Croatia was organized. Workshop was advertised nationwide, with the help of Croatian Chamber of Pharmacists and Croatian Pharmaceutical Society. Participation was voluntary and community pharmacists from all over Croatia participated. The workshop lasted for a total of 20 hours, and during that time various topics in the area of clinical pharmacy and pharmacotherapy were discussed, as shown in Table 1.

Table 1. Curriculum of the workshop

Topic	Number of teaching hours	Main teaching method
Pharmaceutical care in practice	1	Formal lectures
Rational pharmacotherapy and drug-related problems	1	Formal lectures
Clinical pharmacy and evidence-based medicine	1	Formal lectures
Routine laboratory tests	1.5	Clinical case solving

Food and drug interactions	1	Clinical case solving
Pharmacokinetic and pharmacodynamic interactions	1	Clinical case solving
Hormone therapy	1.5	Clinical case solving
Psychotropic drugs and antidepressants	1.5	Clinical case solving
Antimicrobial drugs	1.5	Clinical case solving
Rare diseases	1.5	Clinical case solving
Hypertension and anticoagulants	1	Clinical case solving
Dyslipidemia and diabetes	1	Clinical case solving
Narrow therapeutic index drugs	1.5	Clinical case solving
Medication errors	2	Clinical case solving
Priority assessment in pharmacotherapy	2	Clinical case solving

The workshop was held in a lecture hall at University of Split School of Medicine with the help of assistants and pharmacy students. They supervised all participants during the workshop, and participants who did not attend all sessions were considered to have dropped out from the study. A pharmacist and a pharmacologist were trainers who prepared and presented workshop materials and discussions. Both trainers have appropriate education and qualifications, for example the pharmacist is a competency development manager and lecturer of pharmaceutical care with a PhD and ambulatory care specialization from American College of Clinical Pharmacy and the pharmacologist is a professor of pharmacology and clinical pharmacy at University of Split School of Medicine. Furthermore, key elements of an effective educational activity, like formal lectures and interactive clinical case solving and exercises, were incorporated into the program. The workshop was designed to provide a brief overview about each topic, but then clinical cases were solved and discussed for the most of the workshop time. Cases were prepared according to the clinical case models available in the literature.^{21 22} By lifting the letter card, each participant had to answer for which of the 4 statements in each case he thought was the most correct. After all participants had revealed their answers, discussion on each statement followed. Participants were also invited to present a few of their own cases from routine practice. From 150 clinical cases, one of the most important learning objectives was increasing the knowledge through the identification and resolution of DRPs in the presented cases. Other learning objectives included developing skill of decision-making process in routine practice, priority assessment in pharmacotherapy and general introduction to the concept of pharmaceutical care.

Evaluation of the workshop effectiveness

In order to assess the level of the clinical knowledge of participating community pharmacists pre- and post-workshop, we used a validated survey-based clinical knowledge measurement tool developed by Williams et al.¹¹ Also, the same tool was used in a cross-sectional study with the aim of determining the clinical knowledge level of community pharmacists in Croatia to identify, evaluate and resolve DRPs, as it was previously reported.¹⁰ The survey was structured on nine clinical cases with a total of 40 statements. Clinical cases were based on scenarios that were found to occur frequently in community pharmacies in Australia. Each clinical case was supposed to assess a pharmacist's ability

to identify, resolve and evaluate a DRP. The survey was composed in a manner that all participants were asked to read short case scenarios and select how relevant, likely or appropriate they found each of the proposed statements using a seven-point Likert scale. In the first three clinical cases each statement was about additional information that would be relevant to acquire for that case, while the next three cases consisted of statements which described potential DRPs in each case and the final three cases consisted of statements about possible recommendations for the patients. Since the clinical cases were supposed to assess pharmacists' ability to manage DRPs, the type of knowledge that was measured is mostly procedural knowledge, as it includes decision making and problem solving in routine practice. However, to be able effectively perform these procedures in practice, pharmacists' procedural knowledge must be based on extensive declarative knowledge. All participating community pharmacists were invited on-site to independently complete the survey twice: at the beginning of the workshop and three days later at the end of the last session of the workshop. Participating pharmacists were supervised to complete the survey independently and without access to additional resources or literature. The survey was anonymous, providing only the participant's age, gender and a simple code to match the participants' results before and after the workshop. Study size calculation was not applicable because survey score difference which is associated with significant changes in routine practice is still not known. Therefore, all participating pharmacists were included in this study, except pharmacists who participated in the previous nationwide cross-sectional study, which was the only exclusion criteria.¹⁰

Data collection and statistical analysis

Afterwards, all data were collected in a Microsoft Excel® worksheet (version 15, Redmond, WA, USA) and each completed survey was evaluated and scored. All statements were scored individually and each statement received a score of 2, 1 or 0 depending how far away the answer was from the correct answer. The lowest possible total score was 0 and the maximum possible 80. A higher score indicates a higher level of clinical knowledge to detect, evaluate and resolve DRPs, as previously described.¹¹

Statistical calculations and analyses of the data were performed using the IBM SPSS® statistical package (version 20, Armonk, NY, USA). The graphical figure was prepared with the GraphPad Prism software (version 6, La Jolla, CA, USA). Mean scores of the study participants were analyzed with the independent samples and paired samples t-test. Normality of data was checked with the Kolmogorov-Smirnov and the Shapiro-Wilk tests. Pearson's correlation was used to correlate pharmacist's score with age. For all tests, a $P < 0.05$ was considered to be statistically significant. All values are presented as mean \pm SD.

Aim of the study

The aim of this study was to increase the knowledge level of community pharmacists in Croatia to identify and resolve DRPs. Primary research outcome was the change of the community pharmacists' knowledge based on pre- and post-workshop evaluation. In addition, age and gender subgroup analysis was performed.

Ethics Committee approval

This study was approved by the University of Split School of Medicine Ethics Committee (003-08/15-03/0001) and each participant consented verbally to participate in the study, as approved by the Ethics Committee. Verbal consent was considered to be appropriate because of the favorable risk/benefit ratio for the participants. The intervention was educational and the assessment tool was the written survey so there were no particular risks for the study participants.

Patient and public involvement

No patients were involved in the design, recruitment and conduct of the study. The study participants voluntarily accepted to participate in this study, and they were familiarized with all the risks and benefits. They accepted the possibility that results of the study could be published."

4) Reviewer:

"Results

It is not clear if the t(number) represents the n used for the analysis. If so, then there is missing data

from the 88 in all of the comparisons the authors list.

Line 176-177, this sentence is written poorly”

Answer: Thank you for this remark, the t(number) represented the degrees of freedom in the statistical tests. However, to avoid any doubts from the readers it has been removed from the Results section. Suggestions fully accepted and Results section has been rewritten accordingly:

“Overall, 115 community pharmacists attended the workshop, 9 were excluded due to having previously completed the survey and in total 88 pharmacists completed the survey both times. This represents about 4% of all community pharmacists in Croatia.²³ The response rate, as shown in Table 2, was satisfactory because participation was voluntary and some participants dropped out before the end of the workshop. Matching method with the simple code was effective, which resulted in the successful matching of study participants for further data extraction and evaluation.

Table 2. Demographics of the matched study participants

	Community pharmacists
Age (mean ± SD)	36.6 ± 9.2
Female (%)	90.9
Male (%)	9.1
Response rate (%)	76.5

Participating pharmacists had a pre-workshop mean score of 42.9 ± 8.2 , and post-workshop mean score of 49.1 ± 8.0 , as presented in Fig 1. The mean score difference of 6.2 ± 9.0 , which represents a 14.5% relative increase, was found to be significant with the paired samples t-test ($t = 6.488$, $P < 0.001$).

Fig 1. Pre- and post- workshop survey scores of participating community pharmacists by age and gender subgroups (Figure 1)

Furthermore, male pharmacists had a pre-workshop mean score of 42.6 ± 4.2 , while female pharmacists had a pre-workshop mean score of 42.9 ± 8.5 , with no significant difference between the scores with the independent samples t-test ($t = -0.09$, $P = 0.93$). However, after the workshop only female pharmacists significantly increased their mean score (paired samples t-test, $t = 6.744$, $P < 0.001$), with the mean score difference of 6.9 ± 9.1 .

Pharmacists in both age subgroups significantly increased their mean scores after the workshop (paired samples t-test, $t = 4.786$, $t = 4.342$, $P < 0.001$) with nearly the same improvement, as presented in Fig 1. Interestingly, there was no significant difference in the survey scores between age subgroups and we found no correlation between pharmacists' survey scores and their age (Pearson's $r = 0.009$, $n = 88$, $P = 0.933$).”

5) Reviewer:

“Discussion

Authors do not discuss why the overall scores were much lower than when used in other studies. Also, authors do not discuss how relevant the DRPs in Australia on the survey related to the DRPs in Croatia. Also not discussed if the developers of the education program were familiar with the survey and the DRPs. Authors also do not discuss how any prior training may have impacted knowledge, they cite a study that trained pharmacists in Croatia [11 and 12]

Page 10, lines 201-203. Authors state the intervention was short but yet occurred over 3 days which the pharmacists had to take off to attend? So maybe not short enough if only 4% of pharmacists

attended?

Page 10, lines 205-210, this seems like it should go at the end of the discussion section with future research

Page 11, lines 211-219. Authors basically describe other literature but do not discuss how it relates to their findings. For example the study by Kimberlin and colleagues really had all the same components plus a 3 month follow-up how do their findings correlate with yours and how are they similar or different.

Page 11, lines 220-227. Authors should further discuss how the different evaluations could have impacted the difference in the results.

Page 11, lines 228-231. Could the reason there was not a significant increase for the male scores was due to the low numbers and inability to show significance?

Page 12, lines 241-243, not sure why this sentence is referenced.

Page 12, lines 251-253. Authors use the word "short" and compare to multiple studies did all the studies have the same 20 hour "short" workshop?"

Answer: Thank you for very helpful comments and advices. All discussions and author comments have now been expanded. Authors also agree that word "short" is probably not the best description for the workshop duration, so it has been removed completely from the manuscript. All suggestions fully accepted and included in the revised Discussion section: "The intensive three-day educational workshop on clinical pharmacy seemed to significantly increase the clinical knowledge of community pharmacists in Croatia to detect and resolve DRPs. This finding implies that an intensive case-based educational intervention could potentially fill the gap in community pharmacists' knowledge about DRPs.

From similar studies, Currie et al. proved that the intensive educational program in pharmaceutical care skills and implementation of these skills in practice successfully increased the rate of identified DRPs.²⁴ They used the 40-hour training program in two parts with the focus on the improvement of problem-solving and communication skills. Their training program did not include clinical pharmacy topics and was solely focused on pharmaceutical care. In addition, Currie et al. evaluated the impact of an educational intervention directly on patients and found that education of pharmacists in pharmaceutical care improves patient outcomes through identification of DRPs. Kimberlin et al. reported that pharmacists who engaged in an educational intervention program more likely assessed DRPs than pharmacists without the educational intervention and this difference held in the 3-month follow-up period.²⁵ Their training program included day-long workshop and home study using a training manual. Furthermore, they evaluated the effectiveness of an intervention by interviewing the patients which indicates better outcomes in routine pharmacy practice. In contrast to this study, results of Kimberlin et al. study are based on elderly patients. Furthermore, recently Lalonde et al. demonstrated that having provided community pharmacists with a short disease-specific training and essential clinical information successfully increased pharmacists' knowledge and clinical skills as well as reduced DRP frequency in community pharmacy practice.²⁶ Lalonde et al. used short 90-minute interactive web based training program on use of medications in chronic kidney disease. Pharmacists in their study completed self-administered questionnaire 12 months later, which showed that pharmacists improved knowledge by 4.5% and clinical skills by 7.4%. Compared to this study it is a smaller relative knowledge increase, however it is maintained a year after educational intervention. According to the Obreli-Neto et al., the majority of continuing education programs were reported to be effective based on the studies' outcome measures.²⁷ It is therefore difficult to compare study results without standardization of outcome measures. Also, studies with similar duration of training and evaluation of participants reported heterogeneous relative knowledge increasement, that ranged from 19% to higher or even 5%, as satisfying.^{28 29}

Interestingly, this study also implies that community pharmacists' age does not correlate with their clinical knowledge of detecting and resolving DRPs, while Mestrovic et al. study in the community pharmacy setting in Croatia revealed that the age of participants, presumably through experience,

improved competency for recognizing and identifying DRPs.¹² However, the two studies used different tools to assess the pharmacist's ability to manage DRPs, and one study primarily evaluated knowledge while the other study evaluated competency, which further involves skills and attitudes of participants. Competency is the ability of pharmacist to make deliberate choices for handling situations and tasks in professional pharmacy practice by using and integrating knowledge and personal values.³⁰ Assessment of attitudes, skills and personal values requires more sophisticated evaluation methods, for example direct observations and objective structured clinical examinations. Therefore, it is possible that age of pharmacists through experience in practice impacts mostly skills, attitudes and personal values of community pharmacists. As opposed to, pharmacists' knowledge could stagnate over time, especially if it is not renewed with continuous educations. This could be the reason for the different findings between the studies, but further research is required in order to clarify this difference.

Furthermore, it was found that after the workshop only female pharmacists significantly improved their clinical knowledge about DRPs, while male pharmacists retained the same level of knowledge as before the workshop. This potentially could be due to a greater emphasis on pharmaceutical care which as a topic could be more appealing to female pharmacists.³¹ However, it is also possible that a small number of male participants ($n = 8$) was not sufficient to show statistical significance, and therefore this finding is questionable and should be further investigated.

Surprisingly, even after the workshop the overall survey scores were also lower than the scores from the original study in Australia.¹¹ Survey was based on clinical cases and DRPs which are relevant in Australian community pharmacy setting. However, the same cases with the same DRPs can be routinely found in Croatian community pharmacy practice, so this could not be the reason for such a difference. As mentioned, this most probably arises from different educational backgrounds and different role of community pharmacists in healthcare systems.¹⁰ Community pharmacists in Croatia are still mostly oriented on traditional pharmacy services like dispensing and supplying of medicines, while additional services, which could expand their role as health care providers, are not available in practice. It is only in the last few years that work has begun to introduce advanced services, like medication review in pharmacy practice. Furthermore, pre-workshop survey scores were also lower than scores in previous nationwide study.¹⁰ Given that the participation was voluntary, it is very likely that pharmacists who believed that they lack knowledge in this area have applied in greater numbers. Also, authors of the workshop expected this since they knew about community pharmacists' general lack of knowledge about DRPs. Therefore, they decided to use the same survey to evaluate the effectiveness of educational intervention.

A major limitation of this study is the fact that post-workshop clinical knowledge scores were evaluated only immediately after the workshop, so these results actually represent short term knowledge gain and are therefore not reflective of any sustained improvement in knowledge. However, patient benefits must be continuous and not limited to certain periods of time. As expected, a majority of studies have also confirmed that training programs increase the knowledge of pharmacists immediately after the educational intervention, and only a few studies revealed that these improvements could be maintained for a year or even longer without any further education.^{7 26} Therefore, follow-up evaluations are needed and these results should be supported by conducting a future survey to determine whether improvements were maintained and to further evaluate the effectiveness of the educational intervention.

Another limitation is the possibility of overestimating the results to the general community pharmacist population since the workshop participation was only voluntary. It is therefore possible that only more motivated and enthusiastic pharmacists attended and thus had a greater improvement in knowledge. It is also possible that any prior training of pharmacists could have impacted the pharmacists' knowledge, although this was the first large scale educational intervention with the goal of increasing knowledge about DRPs in Croatia. Since community pharmacists in Croatia have not previously received any training of this type and there were no pharmacists who have completed postgraduate studies, this was probably not a limitation. Also, since study participants were from all over the country and represent both the small privately-owned pharmacies and the large pharmacy chains and

participants gender distribution is representative of Croatian community pharmacists population, generalization of these results to the community pharmacy setting is much more applicable.²³ Finally, this study once more confirms previously reported findings that educational interventions through workshops are a useful tool to successfully improve pharmacists' knowledge on various topics in pharmacy practice.^{7 19 32 33} Educational interventions can play a vital role in expanding basic pharmacy education and enhancing pharmaceutical care implementation, especially when insufficient training has been received during undergraduate or graduate studies.²³ However, to evaluate the true relevance of these findings for community pharmacy practice, it is still necessary to find out if the increased clinical knowledge level of community pharmacists will result in an increased level of clinical interventions about DRPs in daily practice. For example, one of the clear indicators would be the number of reported adverse drug reactions or documented clinical interventions in this group of pharmacists. If confirmed, these findings could have an important implication for pharmacists' continuing education about DRPs."

VERSION 2 – REVIEW

REVIEWER	Amir Sarayani University of Florida, USA
REVIEW RETURNED	15-Jan-2020

GENERAL COMMENTS	<p>Thank you for your invitation to evaluate the revision. I believe the authors has improved the manuscript and addressed my comments appropriately. I may provide one clarification and one comment.</p> <p>Clarification: I noticed the term "effectiveness" in their abstract in the first round of peer review and intended to mention that a term like "efficacy" is more appropriate than "effectiveness". I missed to use a negation verb in my original sentence.</p> <p>Comment: I recommend including the process of translating the outcome assessment questionnaire in the main manuscript or as a supplement. "Survey was validated in Australia, and only verification has been carried out in Croatia. Since the same clinical cases with the same DRPs can be routinely found in Croatian community pharmacy practice, authors agreed that the survey was transferable and appropriate for use in Croatia. Survey was translated to Croatian, and to confirm the validity of translation, the back-translation from Croatian to English was carried out by a fluent English speaker and experienced biomedical scientist, blinded to the study details and the original wording. Afterwards, to verify the use of validated survey in Croatian setting, survey was administered to the pharmacy students at University of Split School of Medicine (firstfifth year), in similar manner as in original survey validation protocol, and results were consistent with the validation data."</p>
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REVIEWER	Jean-Venable R. Goode, Pharm.D., BCPS, FAPhA, FCCP Virginia Commonwealth University, USA
REVIEW RETURNED	20-Jan-2020

GENERAL COMMENTS	<p>Much improved manuscript!</p> <p>Page 14, paragraph 1 Authors should address the impact of the change in curriculum 2006-09 that is included in the introduction and how it may have impacted scores.</p> <p>Page 14, line 264 should be education.</p> <p>Page 15 paragraph 1 – authors do not discuss how the pharmacists who had required education in the study reference 10 related to the current study. Additionally, authors reference that pharmacists in Croatia have not received this type of training but reference 10 had a subset of pharmacists who received training from the pharmacy chain with mandatory education</p> <p>Page 15, line 310, authors reference data from 2006 is this the same time line as the study, this is not clear if the data matches.</p> <p>Table 2</p> <p>It seems as if the response rate is actually 88/106 because 9 individuals were excluded</p>
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VERSION 2 – AUTHOR RESPONSE

Responses to Reviewer's comments:

Reviewer #1:

Reviewer: "Clarification: I noticed the term "effectiveness" in their abstract in the first round of peer review and intended to mention that a term like "efficacy" is more appropriate than "effectiveness". I missed to use a negation verb in my original sentence."

Answer: Thank you for your evaluation of the revision and for this clarification. Authors also agree that the word efficacy is more appropriate for the manuscript, therefore the word „efficacy“ was used instead of the word „effectiveness“, as suggested.

Title: Improving community pharmacists' clinical knowledge to detect and resolve drug-related problems in Croatia: a before/after survey study investigating the efficacy of an educational intervention.

Throughout manuscript: ... Survey-based clinical knowledge measurement tool was used in order to evaluate the efficacy of the workshop... Follow-up evaluations are needed in order to evaluate the long-term efficacy of the educational intervention.... Evaluation of the workshop efficacy ... Therefore, they decided to use the same survey to evaluate the efficacy of educational intervention... Therefore, follow-up evaluations are needed and these results should be supported by conducting a future survey to determine whether improvements were maintained and to further evaluate the efficacy of the educational intervention...

Reviewer: „ I recommend including the process of translating the outcome assessment questionnaire in the main manuscript or as a supplement.

Answer: Suggestion fully accepted. Details about the process of translating the outcome assessment tool were added to the revised Methods section in the main manuscript accordingly: ... In order to assess the level of the clinical knowledge of participating community pharmacists pre- and post-workshop, we used a validated survey-based clinical knowledge measurement tool developed by

Williams et al. Also, the same tool was used in a cross-sectional study with the aim of determining the clinical knowledge level of community pharmacists in Croatia to identify, evaluate and resolve DRPs, as it was previously reported. The survey was structured on nine clinical cases with a total of 40 statements. Clinical cases were based on scenarios that were found to occur frequently in community pharmacies in Australia. Each clinical case was supposed to assess a pharmacist's ability to identify, resolve and evaluate a DRP. The survey was originally validated in Australia, and only validation verification has been carried out in Croatia. Since the same clinical cases with the same DRPs can be routinely found in Croatian community pharmacy practice, authors agreed that the survey was transferable and appropriate for use in Croatia. Therefore, survey was translated to Croatian, and afterwards to confirm the validity of translation, the back-translation from Croatian to English was carried out by a fluent English speaker and experienced biomedical scientist, blinded to the study details and the original wording. The survey was composed in a manner that all participants were asked to read short case scenarios and select how relevant, likely or appropriate they found each of the proposed statements using a seven-point Likert scale. In the first three clinical cases each statement was about additional information that would be relevant to acquire for that case, while the next three cases consisted of statements which described potential DRPs in each case and the final three cases consisted of statements about possible recommendations for the patients. Since the clinical cases were supposed to assess pharmacists' ability to manage DRPs, the type of knowledge that was measured is mostly procedural knowledge, as it includes decision making and problem solving in routine practice. However, to be able effectively perform these procedures in practice, pharmacists' procedural knowledge must be based on extensive declarative knowledge...

Reviewer #2:

Reviewer:

"Page 14, paragraph 1 Authors should address the impact of the change in curriculum 2006-09 that is included in the introduction and how it may have impacted scores. Page 14, line 264 should be education."

Answer: Thank you for your second review and for very helpful comments and remarks. Suggestions fully accepted. The Discussion section has been rewritten accordingly: ...Interestingly, this study also implies that community pharmacists' age does not correlate with their clinical knowledge of detecting and resolving DRPs, while Mestrovic et al. study in the community pharmacy setting in Croatia revealed that the age of participants, presumably through experience, improved competency for recognizing and identifying DRPs. However, the two studies used different tools to assess the pharmacist's ability to manage DRPs, and one study primarily evaluated knowledge while the other study evaluated competency, which further involves skills and attitudes of participants. Competency is the ability of pharmacist to make deliberate choices for handling situations and tasks in professional pharmacy practice by using and integrating knowledge and personal values. Assessment of attitudes, skills and personal values requires more sophisticated evaluation methods, for example direct observations and objective structured clinical examinations. Therefore, it is possible that age of pharmacists through experience in practice impacts mostly skills, attitudes and personal values of community pharmacists. As opposed to, pharmacists' knowledge could stagnate over time, especially if it is not renewed with continuous education. This could be the reason for the different findings between the studies, but further research is required in order to clarify this difference. Also, it is interesting that there was no significant difference in the survey scores between age subgroups. It could have been expected that the participants in the younger subgroup should have higher survey scores, considering that this subgroup included pharmacists who studied after the revision of pharmacy curricula. However, first generations of pharmacists who studied under the revised program have started working five to six years later, including the obligatory internship, therefore it is very likely that their number was not large enough to detect differences between subgroups. It should be further

investigated in the future to verify if the curricular revision led to an improvement in pharmacists' knowledge about DRPs...

Reviewer:

"Page 15 paragraph 1 – authors do not discuss how the pharmacists who had required education in the study reference 10 related to the current study. Additionally, authors reference that pharmacists in Croatia have not received this type of training but reference 10 had a subset of pharmacists who received training from the pharmacy chain with mandatory education"

Answer: Suggestions fully accepted. Thank you for helpful comments. Further clarification has been added to the revised Discussion section. Pharmacists from the pharmacy chain with mandatory education received only general type of education on a regular basis, and this was not the same type of training (intensive case-based workshop focused on increasing knowledge about DRPs). The Discussion section has been rewritten accordingly: ...Surprisingly, even after the workshop the overall survey scores were also lower than the scores from the original study in Australia. Survey was based on clinical cases and DRPs which are relevant in Australian community pharmacy setting. However, the same cases with the same DRPs can be routinely found in Croatian community pharmacy practice, so this could not be the reason for such a difference. As mentioned, this most probably arises from different educational backgrounds and different role of community pharmacists in healthcare systems. Community pharmacists in Croatia are still mostly oriented on traditional pharmacy services like dispensing and supplying of medicines, while additional services, which could expand their role as health care providers, are not available in practice. It is only in the last few years that work has begun to introduce advanced services, like medication review in pharmacy practice. Furthermore, pre-workshop survey scores were also lower than scores in previous nationwide study.¹⁰

However, pharmacists who participated in previous nationwide study were excluded and the only relation with this study is that previous study revealed community pharmacists' general lack of knowledge about DRPs. Also, in previous study participants were community pharmacists from large pharmacy chains while this study presumably included more pharmacists who believed that they lack knowledge in this area, since the participation was voluntary. Authors of the workshop expected this since they knew about community pharmacists' general lack of knowledge about DRPs. Therefore, they decided to use the same survey to evaluate the efficacy of educational intervention...

...Another limitation is the possibility of overestimating the results to the general community pharmacist population since the workshop participation was only voluntary. It is therefore possible that only more motivated and enthusiastic pharmacists attended and thus had a greater improvement in knowledge. It is also possible that any prior training of pharmacists could have impacted the pharmacists' knowledge, although this was the first large scale educational intervention with the goal of increasing knowledge about DRPs in Croatia. Most of the trainings that pharmacists have previously had were in the form of lifelong learning with various topics from pharmacy practice and were not specifically focused on improving knowledge about DRPs. Therefore, since community pharmacists in Croatia have not previously received any training of this type and there were no pharmacists who have completed postgraduate studies, this was probably not a limitation. ...

Reviewer:

"Page 15, line 310, authors reference data from 2006 is this the same time line as the study, this is not clear if the data matches."

Answer: The intention of this reference was only to indicate that participants gender distribution is representative of Croatian community pharmacists population. Authors fully agree that this reference is out of date, so it has been updated with the more recent references that equally confirm the representativeness of the study gender distribution. Pharmacists gender distribution in Croatia is approximately 9/1 (female/male) and remains unchanged throughout the years.

The discussion section has been rewritten with the more recent references accordingly: "...Also, since study participants were from all over the country and represent both the small privately-owned pharmacies and the large pharmacy chains and participants gender distribution is representative of

Croatian community pharmacists population, generalization of these results to the community pharmacy setting is much more applicable.^{32 33} ...

Reviewer:

"Table 2 It seems as if the response rate is actually 88/106 because 9 individuals were excluded"

Answer: Thank you for this remark. Table 2 has been corrected accordingly:

Table 2. Demographics of the matched study participants

	Community pharmacists
Age (mean \pm SD)	36.6 \pm 9.2
Female (%)	90.9
Male (%)	9.1
Response rate (%)	83.0