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RESEARCH ARTICLE

The role of pharmacists in community education to promote responsible self-medication in Indonesia: an application of the spiral educational model

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Abstract

Background Community empowerment is one key strategy to improve the health of Indonesians. In 2015, the Government initiated the 'Smart Use of Medications Campaign' to empower Indonesians to practice responsible self-medication. Analysis of a pilot training program established in 2016 identified that improvements were needed in the content and organisation of the module. *Objective* To evaluate a revised module (applying a spiral model approach) to guide community training as part of the 'Smart Use of Medications Campaign'. *Setting* The Ngawi District, Indonesia in May 2018. *Method* Eight pharmacists (trainers) and 39 community representatives (participants) were involved in the training based on the revised module. The module adopted the spiral approach and consisted of three progressive steps: (1) understanding basic concepts of information on the label/package of one medication product; (2) re-enforcing that concept to understand medication classification (applied using three products); and (3) expanding the concept to understand medication classification (applied using a pack of 40 products). Pre-/post-test scores were used, and Focus Group Discussions were conducted to explore the participants' knowledge gain. Main outcome measure: participants' and trainers' views on the spiral process. *Result* Participants' mean overall knowledge gain increased from 12.53/15 to 13.44/15 ($p = 0.001$). Six focus groups of participants and two focus groups of trainers perceived that both trainers and participants found the spiral model better facilitated understanding, as it involved step-by-step learning. They also indicated the importance of the role of pharmacists as suitably qualified trainers as well as the development of appropriate training aids/media and arrangements. *Conclusion* Training based on the spiral model has the potential to be implemented in community training to improve self-medication literacy among the Indonesian public. Support from pharmacists as well as the relevant national and professional bodies is essential for successful implementation of the training.

Keywords Community-based education · Indonesia · Pharmacist · Self-medication · Spiral educational model

Impacts on practice

- The employment of a spiral educational model for community training in self-medication has the potential to improve community self-medication knowledge.
- The spiral model facilitates an improved learning process since it involves a step-by-step learning process, initially from one medication which is applied step-wise to a range of medications.
- Support from pharmacists as suitably qualified trainers as well as the development of appropriate training aids/media and arrangements are essential to implement the

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model for training a community to promote responsible self-medication in Indonesia.

Introduction

Indonesia is the largest archipelago and the fourth most populous country in the world [1]. With approximately a 260 million population spread across almost 18,000 islands [1], the range of health challenges in Indonesia is daunting. In addition to the burden of both infectious and chronic non-communicable diseases, Indonesia is wrestling with maldistribution and shortages of health workers and facilities [1, 2]. Commencing in 2014, the Indonesian Government inititated *Jaminan Kesehatan Nasional* (JKN), a national health scheme, which aimed to provide basic healthcare to all Indonesians [3]. Rapid expansion of health care demand through JKN will require intensified and strategic investments. In light of the limited health resources available, it is vital for JKN to invest in empowering individuals/families and communities to maintain their own health, which is also known as 'self-care' [4].

Self-medication has been an essential form of self-care among Indonesians; based on a population survey in Indonesia, where 61% of the population practised self-medication in 2014 [5]. Self-medication is "the selection and use of medicines by individuals to treat self-recognised illnesses or symptoms" [6]. Hence, self-medication has the potential to move the population towards a greater independence to treat minor ailments, thereby optimising the use of easily accessible health resources for minor ailments and reducing health expenditure linked to the unnecessary medical treatment of minor ailments [7]. However, major problems related to self-medication have been reported, such as incorrect self-diagnosis, delays in seeking medical advice when needed, and serious health hazards (e.g. adverse reactions and prolonged suffering) [7, 8]. In this context, the government should take necessary steps to foster responsible self-medication, which is defined as "the practice whereby individuals treat their ailments and conditions with medicines which are approved and available without prescription, and which are safe and effective when used as directed" [6]. In addition to making available safer drugs which include clear directions for use; it is important for the people who are practising self-medication to have adequate knowledge about these medications [9].

In 2015, the Indonesian Government launched the 'Smart Use of Medications Campaign' (*Gerakan Masyarakat Cerdas Menggunakan Obat*—GeMa CerMat) scheme which aimed to empower Indonesians to practice responsible self-medication [10]. The GeMa CerMat initiative involved, but was not limited to, community-based training to improve Indonesians' self-medication literacy and quality use of medications. Pharmacists, with their educational background on medications, were expected to be actively involved as trainers in the program. One well established role of pharmacists is assisting community members when purchasing non-prescription medications through pharmacies [11–14]; however, little evidence is available for their role in community education. Previous studies in Indonesia have reported positive outcomes of pharmacist-led community training for patients with chronic conditions, including diabetes and tuberculosis [15, 16].

Using the concept of the previous community training on chronic conditions [15, 16], GeMa CerMat pilot training was conceptualised and carried out across Indonesia in 2016 [17]. Follow-up discussions with the pharmacist trainers suggested the need to improve the training module in terms of the content as well as the overall structure [17]. The initial module organised the content into three serial activities: (1) medication classification, (2) information on the medication label/package, and (3) additional information; this serial approach requires learners to understand one concept initially, before continuing to another concept in the next stage, until all concepts were learned. This approach might cause some difficulty for community member of limited literacy to understand [17]. As a result, the spiral approach, based on Bruner's theory (1960), could have particular advantages; the spiral approach exposes learners to the overall concepts (at the initial stage)—starting from the simplest form and gradually building up in complexity in the next stages [18, 19]. In addition, the spiral curriculum has been widely applied and is particularly relevant to integrated and problem-based learning [19–22], thus having the potential to be applied to community based training on the use of medications.

Aim of the study

This present study aims to evaluate the application of a spiral model approach to community education to promote responsible self-medication.

Ethics approval

The data collection instrument and methodology used in this study were approved by the Ethics Committee of the Faculty of Medicine, Islamic University of Indonesia (No. 08/Ka.Kom.Et/70/KE/IX/2016).

Method

Developing a module using the spiral model approach

In 2016, the East Java Provincial Health Office conducted GeMa CerMat community training across four cities/districts

of East Java (Blitar, Nganjuk, Sumenep, and Ngawi) to promote responsible self-medication. A module 'Introduction to the use of medications (1st edition)' was used to guide the training. The module was generated from The Indonesian Ministry of Health module which was followed with implementation overseen by an expert panel; the final 1st edition module consisted of three serial activities: (1) medication classification, (2) information on the medication label/package (i.e. drug logo, name, active ingredients, indication, administration and dosage, adverse effects, and storage), and (3) additional information (i.e. special dosage forms and safe disposal of medications) [17]. Following the training, four Focus Group Discussions (FGDs)—each involving five pharmacists/pharmacy staff trainers (detailed characteristics were published elsewere [17])—were conducted to obtain their views and feed-back regarding the training delivery. Areas for module improvement were identified, including content as well as the organisation of the content within the overall structure of the module [17].

Based on these recommendations, a new module was developed by the research pharmacists using a spiral model approach 'Introduction to the use of medications (2nd edition)'. The approach was predicated on cognitive theory advanced by Bruner (1960) [18], who stated, "We begin with the hypothesis that any subject can be taught in some intellectually honest form to any child at any stage of development." Hence, even the most complex material, if properly structured and presented, could be understood even by very young children [18]. Key features of the spiral curriculum model are: (1) topics are revisited; (2) there is an increasing level of difficulty; and (3) new learning is related to previous learning and is placed in context with the old information [19]. Previous studies have reported that features of a spiral curriculum have been linked to improved learning outcomes; which were particularly relevant when used in an integrated and problem-based learning curriculum [19–23].

Using similar goals and competencies as for the 1st edition module (i.e. to understand information on medication label/packages); the 2nd edition module was delivered based on the spiral approach concept. The module consisted of three progressive steps: (1) understanding basic concepts regarding information on the label/package of one medication product; (2) re-enforcing that concept to understand medication classification (applied using three medication products); and (3) expanding the concept to broadly understand medication classification (applied using a medication pack) (Table 1). A medication pack included four sets of medications each containing 10 medications of the following minor ailment categories: analgesics-antipyretics, cough and cold medications, vitamins and minerals, and gastrointestinal medications. These therapeutic areas were chosen, because they were among the most common minor illnesses treated in primary health facilities in East Java, Indonesia [24].

Table 1 Summary of the steps involved in the revised spiral module

Step 1: to understand basic concept of information on one medication label/package
Activities:
-Provide one medication product to the participants
-Discuss and illustrate basic information provided on the medication label/package (drug logo, name, active ingredient, indication, administration, adverse effects, storage—fill in worksheet A
Step 2: to step-wise understand medication classifications (using three medication products)
Activities:
-Add two further medication products (one product that has the same active ingredient but a different indication to the first product, and one product that has the same indication but different active ingredient to the first product)
-Ask each participant to classify the medications based on the active ingredients—fill in worksheet B
-Ask each participants to classify the medications based on the indications—fill in worksheet C
-Ask each participants to classify the medications based on the logo: —general sale, —general sale with cautionary label, —prescription only, —narcotics:—fill in worksheet D
-Discuss the classifications
Step 3: to demonstrate understanding of medication classifications (using a medication pack of 40 items)
Activities:
-Provide a medication pack to a small group of participants
-Ask participants to classify the medications based on the active ingredients
-Ask participants to classify the medications based on the indications
-Ask participants to classify the medications based on the logo
-Discuss the classifications

Applying the spiral approach to community education

A pilot study to implement the revised training model was conducted in Ngawi. Ngawi is a district (*kabupaten*) located in western part of East Java Province, Indonesia. Based on the statistical data for Ngawi in 2012, Ngawi covers an area of 1296 km^2 with a population of 911,911 people; health facilities in Ngawi included two hospitals, 24 Primary Health Centres (PHC—*Puskesmas*), and 51 community pharmacies [25].

The community training for this study planned to involve eight pharmacists (trainers) and 40 community members (participants) in Ngawi. The pharmacists were purposefully selected by the Chief of Ngawi Health Office from pharmacists involved in the training completed in 2016; it included those from community pharmacies, PHCs, and the Ngawi Health Office. While participants were purposively selected from community members actively involved in supporting health activities in their local PHCs. The purposive sampling was considered the most feasible, since not all community members that visited the local PHCs in Ngawi have provided their contact details. The best option was to ask the Ngawi Health Office Chief to select community members actively involved in the local PHCs as their contact details were readily available.

Fourty community members and eight pharmacists were verbally invited by Ngawi Health Office staff to attend the community training session in the Ngawi Health Office in May 2018. The day before the training session, the principal researcher (an academic pharmacist) explained and simulated the revised module to prepare the pharmacists as trainers. At the beginning of the training, the nature of the study was explained and informed consent were obtained. Eight groups of approximately five participants were formed, and each group was facilitated by one pharmacist trainer using the spiral approach module (the research pharmacists assisted to ensure consistency). The training session took about three hours.

Participants' knowledge before and after the spiral approach learning was evaluated using the same 15-question true/false test. The test was developed by an expert panel (consisted of four pharmacists/academics expert in the area of pharmacy practice) based on the basic concepts of medication use covered in the module (Table 1). Each question was scored "1" (for correct answer) and "0" (for wrong answer), thus providing a total range of 0 to 15. A short questionnaire was administered to obtain participant characteristics data which was included with the test.

In addition to participants' knowledge gain, trainers and participants' views on the spiral process were evaluated using Focus Group Discussions (FGDs). Two FGDs of trainers (each involving approximately four trainers) and four FGDs of participants (each involving approximately 10 participants) were planned. Each FGD was facilitated by one moderator (the research pharmacist) and the discussion was assisted with a semi-structured guide. The guide explored four aspects related to the training: (1) delivery method (use of spiral approach), (2) material/content, (3) trainer, and (4) training arrangements. All FGDs were conducted in Bahasa Indonesia and lasted about 30 min; a summary was provided to the participants at the end of the discussion as a means of member-checking, ensuring credibility of the data [26].

Data analysis

Community representative's knowledge gain was determined using the pre-and post-test scores; differences in the scores were analysed using a paired *t*-test or Wilcoxon signed-rank test if the data were not normally distributed. Statistical analyses were performed using SPSS Statistics version 19.0. Audio-recorded data from the focus group meetings were transcribed, and transcripts were reviewed using inductive thematic analysis [27]. All transcripts were coded manually by cutting and pasting between documents, and the codes were categorised at a broader conceptual level (i.e. themes). The analysis was performed by one of the research pharmacists, and extracted themes were validated by discussion with the principal researcher to reach a consensus. Data analysis was conducted in Bahasa Indonesia and the illustrative verbatim quotes and theme labels were translated into English. While presenting the quotes, trainers/participants' identity was coded to maintain confidentiality, e.g. Trainer 1.1 (trainer number 1 from FGD 1).

Results

A total of eight pharmacists and 39 community members consented to the study. Characteristics of the community members involved in the training in Ngawi are presented in Table 2. A majority of the community members were female and approximately 50% were housewives with a mean age of 40 years. Almost 80% of the community members had practised self-medication in the last month; their sources of information for self-medication were mainly mass media or friends/relatives, and almost all of them purchased their medication from community pharmacies.

Of the eight pharmacists involved in the training, all were female with a mean age of 37 years (Table 3). The pharmacists included those from community pharmacies, PHC and the Ngawi Health Office; and all of them had past experience with community training.

Table 2 Community members' characteristics (n = 39)

Characteristics	N (%)
Age (years) (mean ± SD)	40 ± 10
Gender	
Male	11 (28)
Female	28 (72)
Education	
Primary school	2 (5)
Junior high school	4 (10)
Senior high school	20 (51)
Diploma	3 (8)
Bachelor	9 (23)
Postgraduate	1 (3)
Occupation	
Not working	1 (3)
Housewife	20 (51)
Civil servants	7 (18)
Private employee	1 (3)
Entrepreneur	10 (26)
Monthly income (in Indonesian Rupiah)[a]	
None	1 (3)
≤ 1 million	12 (33)
> 1–2.5 million	4 (11)
> 2.5–5 million	16 (44)
> 5–10 million	3 (8)
Self-medication practices	N (%)
Frequency of self-medication in the last month	
None	9 (23)
1–2 times	28 (72)
3–5 times	2 (5)
Source of information[b]	
Mass media (television, radio, newspaper, magazine, internet)	11 (28)
Friends or relatives	15 (36)
GP or based on old prescription	3 (8)
Pharmacist or pharmacy staff	9 (21)
Other health professionals	2 (5)
Source of medication[b]	
Street stall or drug shop	4 (10)
Community pharmacy	37 (95)

Abbreviation: *GP* general practitioner

[a]3 missing responses

[b]Participant can provide more than 1 answer

Participant's knowledge gain

The mean overall test scores for all participants significantly improved from mean of 12.53 (pre-test) to 13.44 (post-test) after the training ($p = 0.001$) (Table 4). There were non-significant increases in post-test scores for four basic concepts covered in the module; significant improvements were reported for participants' knowledge towards drug name and active ingredient as well as drug logo (all $p < 0.05$).

Trainers and participants' views related to spiral learning process

Six FGDs with participants and two FGDs with trainers involved in the community training were conducted. Their views related to the aspects of spiral model were explored, including: (1) delivery method, (2) material/content, (3) trainer, and (4) training arrangements.

Aspect related to the delivery method

Both trainers and participants indicated positive responses to the spiral model approach used to deliver the training. The spiral structure allowed participants to develop a logical progression from simplistic ideas to more complex applications, thus making the learning process easier; as illustrated by Trainer 1.1 "(the current organisation) is easier, starting to learn from one medication and adding more medications step-by-step.", and Participant 2.3 "(We learn from) one medication first. One by one so that we did not get confused."

While trainers and participants reported positive responses, they identified some areas that should be further discussed, including the use of worksheets, language of delivery, and visual aids. Some of the trainers indicated that the worksheets were not suitable for older adults, as illustrated by Trainer 2.3: "for older adults, it would be difficult (to ask them to fill the worksheets) as (the worksheets) were quite a lot."; while others believed that the worksheets would help participants to be more engaged to the learning process as illustrated by Trainer 1.4: "But it is good if they write (what they learn) as it forced them to read." Thus, patients' characteristics should be considered while determining the appropriate training media, such as less written work and more interactive activities for older participants. In addition, trainers and participants indicated the need to simplify medical terms used in the worksheets, such as active ingredients and indications.

While trainers believed it is best to use Bahasa Indonesia (the national language) for the module; trainers and participants pointed out the importance to recognise the language background of the participants and use it when necessary while delivering the material. This was as illustrated by Trainer 2.2, "What I did was using mixed (languages), I sometimes used Javanese language (i.e. local language) as well as Bahasa Indonesia depending on the participants' background."; and Participant 3.5 "Better to use 'our' language (i.e. local language or language they are using in daily

Table 3 Pharmacist trainers' characteristics (n = 8)

Characteristics	N (%)
Age (years) (mean ± SD)	37 ± 4
Gender	
Female	8 (100)
Work experience	
> 5–10 years	3 (38)
> 10 years	5 (63)
Institution	
Community pharmacies	4 (50)
PHC	3 (38)
Ngawi Health Office	1 (13)
Experiences in community training	
1–2 times	5 (62)
2–5 times	3 (38)

Abbreviation: *PHC* Primary Health Centre

conversation), easy to understand." Furthermore, trainers and participants indicated issues related to the medication pack that accompanied the module, including: incomplete information on the medication label/package (such as no logo), very small text and difficult medical terms on the medication label/package; all of those warrant further consideration while delivering the training.

Aspects related to the material/content

Both trainers and participants believed that the training module covered adequate information to improve literacy on self-medication practice (i.e. drug logo, name, active ingredients, indication, administration, adverse effects, and storage). Participants also reported varied new skills and knowledge gained after the training, particulary related to the drug name or active ingredient [as Participant 2.5 stated: "I just knew that paracetamol has a different kinds of (brand) names"], indication [as Participant 7.3 stated:"(I learn mostly on) what the drug use for"], and drug logo [as Participant 4.2 mentioned: "We happened to know all kinds of drug logo, in the past we only saw blue or red circle (but did not know what it is)]."

Aspect related to trainer

Trainers have a key role for a successful implementation of the spiral model approach as they should be able to facilitate participant discussions in a controlled way while gradually increasing the complexity of the material. Thus, in addition to competencies for the quality use of medications, participants indicated the importance of trainers to have good communication skills; as illustrated by Participant 7.1: "She (the trainer) has adequate communication skill so that (the discussion) was quite interactive", and Participant 3.4 "The language used was easy to follow."

Aspects related to training arrangements

All participants indicated that the current training arrangements using a roundtable small group discussion provided an effective engagement and ensured individual attention; as Participant 6.2 stated, "If using round table like this, we can interact face to face, (so that) it is easier to discuss (about the material)." In addition, time allocation (2–3 h) was considered sufficient for participants to learn the material. All participants also suggested that the training could be conducted on a regular basis to build community awareness towards responsible self-medication; as illustrated by Participant 3.2, "(the training) should be conducted every few months; so that, (the community) could improve their knowledge."

Table 4 Pre-/post-test scores of community members participating in the training

Basic concepts of medication information	Pre-test (mean ± SD)	Post-test (mean ± SD)	*p* value[a]
Drug name and active ingredient (Q3, Q4, Q9, Q10; range score 0–4)	3.17 ± 0.82	3.41 ± 0.72	0.039
Indication (Q5, Q7; Q11; range score 0–3)	2.53 ± 0.55	2.72 ± 0.51	0.052
Drug logo (Q1, Q2, Q 12; range score 0–3)	2.17 ± 0.51	2.49 ± 0.51	0.007
Administration (Q6, Q12; Q 13, range score 0–3)	2.74 ± 0.50	2.85 ± 0.43	0.331
Adverse effects (Q14; range score 0–1)	0.92 ± 0,27	0.97 ± 0.16	0.317
Storage (Q15; range score 0–1)	0.95 ± 0.22	1.00 ± 0.22	0.157
Total[b] (range score 0–15)	**12.43 ± 1.59**	**13.44 ± 1.37**	**0.001**

Abbreviation: *Q* question number, *SD* standard deviation

[a] *p* value from Wilcoxon signed-rank test between pre-test versus post-test scores

[b] Total scores from 15 questions

Discussion

This study showed the potential of using the spiral model approach for the provision of community training to improve self-medication literacy and quality use of medicines among Indonesians. This was evidenced with significant improvements between pre- and post-test scores on module knowledge among participants. Furthermore, the spiral model approach was perceived to be easier to follow by both trainers and participants as it proposed step-by-step learning to initially develop understanding of the relevant information from one medication which was then applied step-wise to a range of medications, thus preventing initial information overload or confusion. In addition to well-designed module content and structure, the implementation of the spiral model approach would require support from pharmacists as qualified trainers as well as appropriate training aids/media and arrangements for a broader uptake.

There were some limitations to this study. This study used a small sample size and purposive sampling of pharmacists (trainers) and community members (participants); thus some caution should be exercised in generalising the findings. The study participants were selected from members of the community actively involved in the local PHCs; hence they might differ in the levels of education, health literacy, and/or motivation compared to the general community members, which might have accounted for them having reasonably high initial test results. However, the positive results (significant pre-/post-test differences) in this pilot study provide insights to the potential use of a spiral model approach to deliver training to improve self-medication literacy among Indonesians. In addition, although pharmacists involved in this study might not fully represent the general pharmacist population, a prior briefing session was conducted to standardise their capability to conduct the training and to ensure consistency. With regards to the FGDs of pharmacists (trainers) and community members (participants), it should be noted the qualitative data are a product of views, experiences and perceptions of respondents, thus it can be biased if respondents are not sharing their true views [28]. To ensure validity in the analysis, however, the results of this study were provided to the trainers and participants ('member-checking') [26].

A pre-/post-test methodology, a common methodology in education research (28), was selected as a straight forward approach to evaluate the impact of the spiral model approach on community members' knowledge acquisition which was an important goal of the program. Although the difference between pre-/post score in this study was significant, the absolute gain was relatively small; this might due the already high baseline (pre-test score) among participants. It should be acknowledged that community members involved in this study were selected from community members actively involved in supporting health activities in local PHCs, thus they might have a higher health literacy baseline; further, the majority of them were high school graduates or higher. This figure might overestimate other Ngawi residents' level of education; based on the BPS Ngawi 2018 [25], the average of schooling years among 15 years of age in Ngawi was 6.88 which is equivalent to elementary school graduates. Hence, ordinary Ngawi community members might have a lower knowledge baseline, with possibly higher improvements could be achieved with the implementation of spiral community training. This needs further community based evaluation before further modifications are contemplated.

In addition to the knowledge evaluation, a qualitative approach—using Focus Group Discussion (FGD) [28]—was applied in this study to provide broader feedback on the spiral model process. In terms of the module content, community members perceived the coverage was sufficient to support them to understand basic information about medications; in particular, they were able to learn more in relation to 'drug name and active ingredients', 'indication' and 'drug logo'. This was in line with significant improvements of pre-/post test related to 'drug name and active ingredients' ($p = 0.039$) and 'drug logo' ($p = 0.007$). In terms of the module stucture, trainers preferred the spiral structure over the previous approach (serial activities) [17); participants (community members) also provided positive responses supporting the use of the spiral approach. The benefits of the spiral model approach in teaching science at schools has been demonstrated [19–22]. However, general community members might have a wide range levels of health literacy; thus, the step-by-step learning (from simple to complex idea) provided by the spiral approach might provide some advantages for community training.

To support the implementation of spiral approach, this study indicated the importance of qualified trainers. Duze (2012) suggested that the teacher's knowledge about the curriculum, and his/her teaching strategies are key factors in implementing a curriculum [29]. Pharmacists are experts in medications where a high level of public trust and confidence in pharmacists' ability to advise on self-medication have been reported [13, 30, 31]; thus, pharmacists could be seen as the best candidates for trainers in self-medication community training. While this study found that this group of community members often obtained information regarding self-medication from mass media and/or friends/relatives, the 'GeMa CerMat' initiative and community training could be seen as an opportunity for Indonesian pharmacists to have a proactive role in promoting responsible self-medication. While pharmacists in this study only needed a short briefing before the training (as they were also involved in the 2016 pilot training),

this might not be the case for the general pharmacist population; a standard system should be considered beyond this study for pharmacists willing to take part as trainers to ensure their capacity in conducting such training. In addition to pharmacists as trainers, a previous study also suggested the involvement of change agents from trusted members of community, such as community health representatives/leaders [32]. As part of the community, change agents would have a close understanding of that community [33–35], and thus are in an ideal positions to bridge the knowledge and/or language gaps between pharmacists and community members.

While the spiral process was well accepted, its application to this study indicated some areas for consideration. These include the development of different training media/aids to suit different participant categories, such as more interactive activities or visual aids for older participants. It was suggested that the decision to use a particular medium should first consider socio-economic and cultural backgrounds of participants [36, 37]. Further, a careful selection of medication packs should be considered for training purposes, including complete information and adequate text size on the medication label/package (or otherwise visual aids should be considered), which is also in line with the finding from the previous community training [17]. Further research would be required to develop appropriate training media/aids for different target groups for a fully successful implementation of a spiral model based curriculum in community training to promote responsible self-medication in Indonesia.

Conclusion

The spiral model approach has the potential to improve self-medication literacy among Indonesians. The implementation of the spiral approach requires support from pharmacists as qualified trainers as well as appropriate training aids/media and arrangements for a broader uptake. Support is also essential from national and professional bodies. Further research is required to confirm the findings into a broader population of community members. The development of a range of training media/aids to suit different target groups is essential to further progress the implementation of a spiral curriculum model in community training to promote responsible self-medication in Indonesia.

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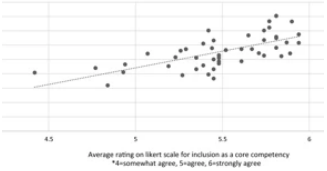

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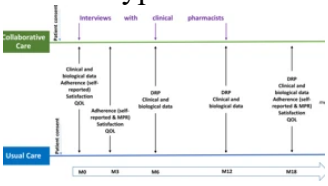

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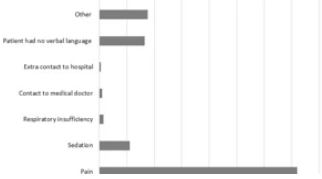

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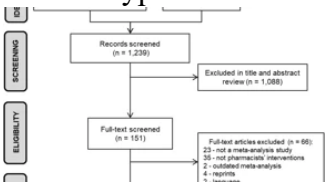

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We invite all study designs including randomised controlled trials, observational studies, database analysis, cross sectional and qualitative studies within the scope of pain management with opioids, or its relation with addiction. Commentaries are also welcome.

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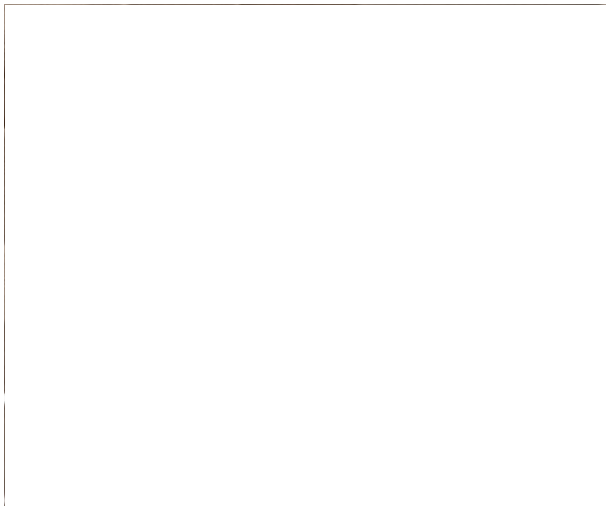

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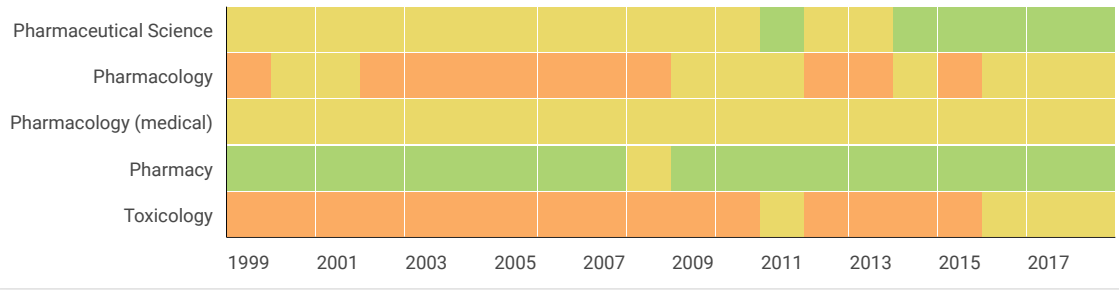

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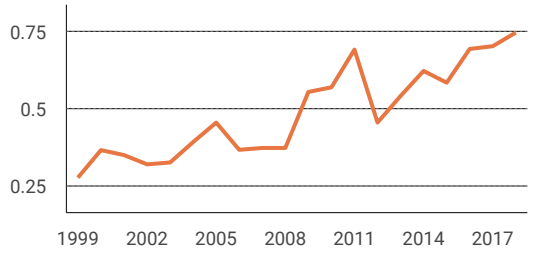

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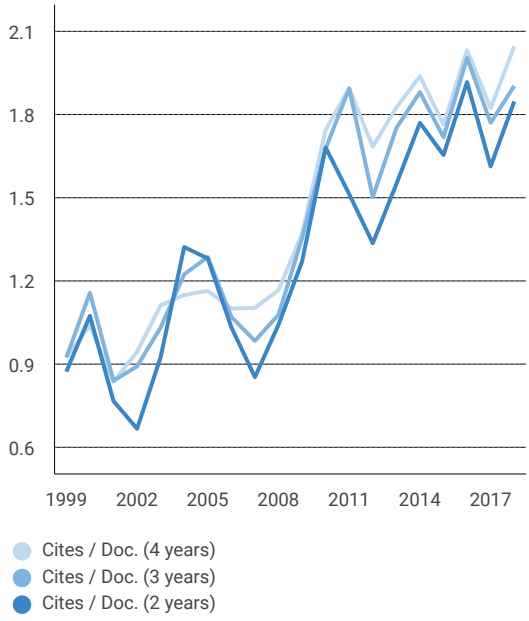

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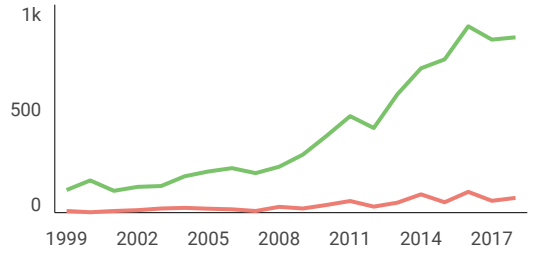

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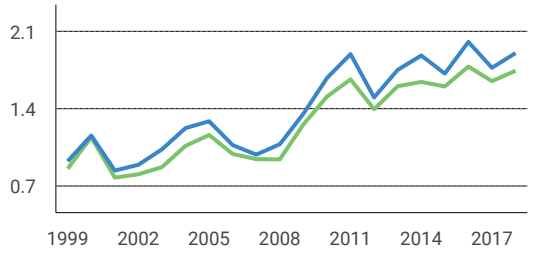

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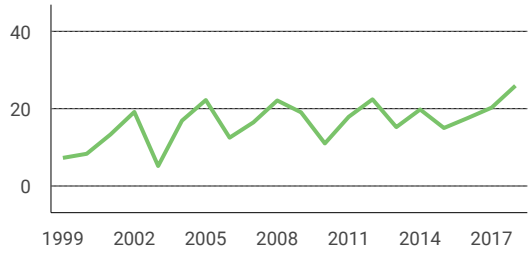

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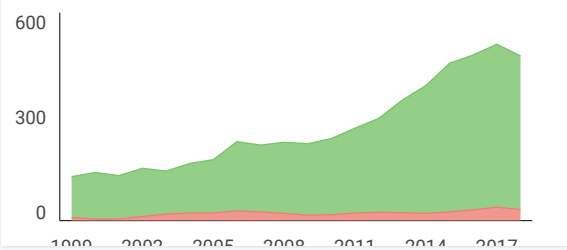

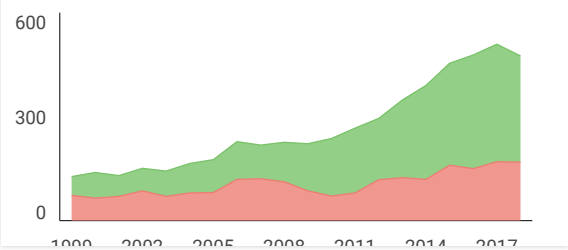

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