

# Training in Professional Pharmacy Services through Educational Videos

Zarzuelo Maria Jose, Valverde-Merino Maria-Isabel\*, Fernandez-Rodriguez Maria, Amador-Fernandez Noelia, Martinez-Martinez Fernando

Pharmaceutical Care Research Group CTS-131, Faculty of Pharmacy, University of Granada, Granada, SPAIN.

## ABSTRACT

**Objectives:** Pharmaceutical Care is a subject within the Pharmacy degree that can not only be taught using theoretical frameworks but also requires new teaching tools, like a simulated educational video. The objective of this study is to produce simulated patient-based videos as a supplementary teaching tool to deepen the understanding and knowledge of Professional Pharmacy Services. **Design:** Several videos based on simulated patient cases of the most prevalent Professional Pharmacy Services (medication adherence, medication review with follow-up, dispensing and minor ailment service) were produced and used as a teaching tool within a theoretical lesson in undergraduate and professional training. **Methods:** A prospective study was performed in two groups: undergraduate students and professional pharmacist. Their opinion about these Educational Videos was evaluated through a questionnaire on a 1-10 scale. Frequencies mean  $\pm$  standard deviation, median and internal consistency of the survey were analyzed. Values of  $p < 0.05$  were considered significant. **Results:** Undergraduate students ( $n=90$ ) and professional pharmacists from Master classes ( $n=59$ ) completed the questionnaire (Cronbach's  $\alpha$  coefficient was 0.8). Statistically significant differences were found in some relevant items between both groups of students, related to the content's clarity ( $9.12 \pm 1.11$  vs  $9.72 \pm 0.57$ ;  $p=0.003$ ), simulation of reality ( $6.60 \pm 2.26$  vs  $8.47 \pm 1.23$ ;  $p < 0.001$ ) and correspondence with theory ( $9.23 \pm 1.07$  vs  $9.64 \pm 0.68$ ;  $p=0.037$ ). General score and most items were rated higher by professional pharmacists than undergraduate students ( $8.19 \pm 0.96$  vs  $8.84 \pm 1.10$ ;  $p=0.001$ ). **Conclusion:** Educational videos are an adequate tool for teaching Pharmaceutical Care, adding new layers of learning to Professional Pharmacy Services.

**Key words:** Pharmaceutical care, Teaching video, Master, Pharmacy Services, Education.

## INTRODUCTION

Pharmaceutical Care (PC) is a professional practice where pharmacists have an active role in patient care, collaborating with other health care professionals and the patient, in order to improve patient's quality of life.<sup>1</sup> This professional practice is carried out through Professional Pharmacy Services (PPS), which are developing fast in the community pharmacy setting. Nevertheless, this development needs to begin during Pharmacy Degree. The International Pharmaceutical Federation (FIP) recommends preparing Pharmacy graduates for developing clinical knowledge

and communication skills to provide effective PPS.<sup>2,3</sup>

Professional practice in pharmacy is a continuous learning during undergraduate, postgraduate and continuing pharmacist education. Under this premise, the teaching community expresses a high concern for the lack of real translation between training and practice in Services. It is known that the provision of PPS requires the acquisition of specific knowledge, skills and attitudes.<sup>4</sup> The lack of training in skills triggers some doubts and uncertainty when it comes to dealing with patients, situations that require

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**Correspondence:**  
Ms. Maria-Isabel Valverde-Merino

Campus de Cartuja s/n  
Facultad de Farmacia,  
Granada, SPAIN.

Phone no: +34 958 241931

Email id:

misabelvalverdemerino@gmail.com



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a greater degree of responsibility and it could cause some insecurity in students.<sup>5</sup> Therefore, there is a need for education in PC for future and current professionals in community pharmacy. Theoretical education is not enough to teach PPS and all its aspects so innovative teaching-learning methods arises.<sup>6-8</sup> The adaptation to the European Higher Education Area (EHEA) is an opportunity to make some changes at Universities.<sup>9</sup> The gradual change of teaching methodologies is a recycling and essential process to obtain the best education for future professionals.<sup>10</sup>

A variety of technology-based interactive solutions using video and virtual patient formats have been suggested to prepare and train students' clinical, interpersonal, social and cultural professional skills. Video-based patient cases are probably more effective than text-based patient cases in fostering patient-centered perspectives in medical students.<sup>11</sup> Teaching through didactic videos can also be termed as 'Video Teaching'. The visualization in an isolated way does not reflect its content, an explanatory theory class is necessary to include case studies through video. Case-studies videos are well suited to illustrate communication with the patient, are easier to remember and to create long-term memory. Furthermore, the video format in class is a common way to present clinical cases to stimulate discussion and increase learning.<sup>12</sup>

The aim of this project is to produce simulated patient-based videos as a supplementary teaching tool for the subject of PC to improve knowledge about Professional Pharmacy Services through undergraduate students and professional pharmacists' opinions.

## METHODS

### Design

The videos were produced between March and November 2017. Each video had three phases: pre-production, production and post-production. Pre-production phase was focused on bibliography search, selection and build up study-cases as a simulated patient. Later on, the script was redacted and adapted to the objectives agreed by a focus group composed by eight experts.

Production phase was developed in July 2017. For this stage two actors were trained for recording each video, one played the role of the pharmacist and the other one as the patient. Medication adherence and Medication Review with Follow-up (MRF) videos were recorded in the School of Pharmacy. A classroom characterized as a regular Spanish community pharmacy, with a dispensing area and a consultation room was used. Videos for

dispensing and minor ailment services were recorded in a real community pharmacy.

For video recording, a Cannon camera EOS 550D with CMOS sensor of 18 mpx and 18-55mm lens and a Zoom H4next (96 kHz) sound recorder were used to record a high definition videos Real Full HD (1080p).

Post-production phase consisted of editing of the videos. Adobe Photoshop, Adobe Premiere was used (Copyright © 2017 Adobe Systems Software Ireland Ltd. and Sony Sound Forge © 2003-2017 Sony Creative Software Inc., California, USA). A header, explanatory snacks, images to show documents or work records and closing were added. Both, production and editing videos were made by professionals.

A prospective study was carried out between November 2017 and April 2018. Undergraduate students and professional pharmacists from Master classes attended interactive sessions where the videos made about PPS were showed within a theoretical lesson. After the classes, both groups of students answered a questionnaire (Table 1) which consisted in 13 questions classified in four groups (Content, format and usefulness of the video and suggestions). Each question was scaled

**Table 1: Questionnaire.**

#### • Content of the video

The content of the video is clear and easily understood.	
It properly simulates the reality	
The content of the video corresponded to the training explained in class.	

#### • Format of the video

Suitable duration	
General quality of the video	
Script and dialogs	
Support information (footer and summaries)	

#### • Usefulness of the video

It complements classroom theoretical-practical training	
It is a good support for classical teaching	
It allows actual practice visualization	
It is useful for learning communication techniques	
It is a useful tool to apply in other classes and training sessions	

#### • Personal assessment, comments and suggestions

General punctuation of the video	
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Comments	
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from 1 (completely disagreed) to 10 (completely agreed). The questionnaire was designed by three experts on PPS based on questionnaires used in previous studies.<sup>13-15</sup>

### Participants

The study was undertaken in the School of Pharmacy at a University of Spain and it was carried out from March 2017 to June 2018. Any student who had been attending to classes of Pharmaceutical Care in the School of Pharmacy at a University of Spain was eligible for inclusion in the study and they belong to the group of undergraduate students of the Degree in Pharmacy. The group of professional pharmacists was Master students, only those who worked as community pharmacists. This study is exempt from IRB review due to it involves normal educational practices that are not likely to adversely impact student's opportunity to learn required educational content.

The calculated sample size is 149, with 95% confidence level. Thus, all the fourth-year pharmacy students (90) who attend to PC classes and all the Master students (59) who work as community pharmacists were included in this study.

### Video production

Four videos that were 10 min long were made. Each video focused on one of the most prevalent Professional Pharmacy Services.

The medication adherence video was about a clinical case of a patient suffering hypertension with combined non-adherence (intentional and unintentional). It was structured in five acts according to the sequence of the proposed case and the steps of the service: 1) Greeting, detection of non-adherence and service offering; 2) Adherence assessment and evaluation; 3) Management of an intentional non-adherence; 4) Management of an unintentional non-adherence; 5) Management of the health problem, farewell and follow-up.

The video about MRF consisted of a sort case of a 72-year-old woman, who suffered angina pectoris some years before. The patient attended the emergency department due to high blood pressure values, around 160-175 mmHg of systolic blood pressure and 80-95 mmHg of diastolic and heart rate between 35-40 bpm. Sublingual captopril was given to lower blood pressure and her treatment for hypertension was modified. The heart rate did not increase and blood pressure remained uncontrolled. The video showed how the pharmacist offered MRF service to the patient, once she got back from the hospital, made a clinical interview, assessed the pharmacotherapy and proposed an intervention to the physician.

The dispensing video consisted of a case about a patient who suffered asthma going to the pharmacy to buy an inhalation device. It showed: 1) The difference between dispensing a treatment for the first time and a refill medication, 2) The characteristics of the inhalation device, 3) The effectiveness and security of the treatment, 4) The technique of three different inhalation devices (a dry powder inhaler (DPI), Accuhaler<sup>®</sup> and Turbuhaler<sup>®</sup>). A video about the minor ailment service was based on a case of a patient who has a persistent cough. The video showed every step of the service: 1) Brief clinical interview to obtain relevant information about the patient and the health problem, 2) Evaluation of the minor ailment, through identifying if there are criteria for referral to the doctor 3) Clinical interventions: life style recommendations, pharmacological treatment, referral to a general medical practitioner or to another professional pharmacy service; 4) Follow-up and evaluation of the results.

Communication and motivational skills between pharmacist and patient were highlighted in every video.

### Statistical Analysis

Values are expressed as mean  $\pm$  standard deviation (SD), median or frequencies. Statistical comparisons were performed using an independent t tests for unpaired observations. Values of  $p < 0.05$  were considered significant. The internal consistency of the survey was assessed using Cronbach's alpha coefficient. A value of Cronbach's alpha 0.50–0.69 was considered acceptable, while values of 0.70–0.90 indicate a strong internal consistency.<sup>16</sup> The analyses were performed using SPSS software for windows, version 19.0 (IBM Corporation, Armonk, NY, USA).

### RESULTS

90 undergraduate students and 59 professional pharmacists were included in the study. The mean age was  $22.7 \pm 3.2$  in the undergraduate student group and  $27.5 \pm 4.3$  in the professional pharmacists group. Approximately 65% were women and more than 90 % of both groups attended to classes (Table 2). Differences between demographics data and items of the questionnaire were not found.

149 questionnaires from undergraduate students and professional pharmacists from Master classes were collected. A Cronbach's  $\alpha$  coefficient of 0.8 was obtained, which indicated a strong internal consistency. The highest rated item by undergraduate students was "It is a good support for classical teaching" with a score of  $9.2 \pm 1.0$  points and the lowest rated item was "It

properly simulates the reality” with a score of  $6.6 \pm 2.3$  points. In general the video was perceived positively by this group of students  $8.2 \pm 1.0$  (Table 3).

Professional pharmacists had the highest result for the item “The content of the video is clear and easily understood” with a score of  $9.8 \pm 0.5$  and the lowest punctuation for “It properly simulates the reality” with a score of  $8.3 \pm 1.5$ . Similarly to the undergraduate group,

the total punctuation of the video was high ( $9.1 \pm 1.0$ ) (Table 3).

Compared with undergraduate student group, professional pharmacists group showed higher score in some items of the questionnaire, being statistically significant: “The content of the video is clear and easily understood” was rated  $9.1 \pm 1.1$  by undergraduate students and  $9.8 \pm 0.5$  by professional pharmacists, ( $p < 0.001$ ). “It properly simulates the reality” was rated  $6.6 \pm 2.3$  and  $8.5 \pm 1.5$  ( $p < 0.001$ ). “The content of the video corresponded to the training explained in class” was rated  $9.2 \pm 1.1$  and  $9.5 \pm 0.6$  ( $p = 0.008$ ). “Duration” was  $8.5 \pm 1.6$  vs  $9.0 \pm 1.5$  ( $p = 0.015$ ). “Quality” obtained  $8.2 \pm 1.1$  and  $8.9 \pm 1.2$  ( $p < 0.001$ ). “Support information” was  $7.9 \pm 1.8$  vs  $9.3 \pm 1.8$  ( $p < 0.001$ ). “Script and dialog” was  $7.5 \pm 1.6$  vs  $9.0 \pm 1.3$  ( $p < 0.001$ ). And “Total score of the video” was  $8.2 \pm 1.0$  for undergraduate students and  $9.1 \pm 1.0$  for Master students ( $p < 0.001$ ) (Table 3).

**Table 2: Students' Demographic Profile.**

	Undergraduate	Master
<b>N</b>	90	59
<b>Gender %</b>	64.4	69.5
<b>Female (n)</b>	58	41
<b>Male (n)</b>	32	18
<b>Age (SD)</b>	22.7 (3.2)	27.5 (4.3)
<b>Attend to classes (75-100%)</b>	93%	98%

**Table 3: Undergraduate and professional pharmacists Feedback toward Educational Video in PPS.**

ITEMS	Median Undergraduate (n=90)	Median Master (n=59)	M Undergraduate (SD)	M Master (SD)	p-value	M Total (SD) (n=149)
<b>Content of the video:</b>						
The content of the video is clear and easily understood	10	10	9.1 (1.1)	9.8 (0.5)	<0.001	9.4 (1.0)
It properly simulates the reality	7	8	6.6 (2.3)	8.3 (1.5)	<0.001	7.3 (2.2)
The content of the video corresponded to the training explained in class	10	10	9.2 (1.6)	9.5 (0.6)	0.008	9.3 (1.0)
<b>Format of the video:</b>						
Duration	9	10	8.5 (1.6)	9.0 (1.5)	0.015	8.7 (1.6)
Quality	8	9	8.2 (1.1)	8.9 (1.2)	<0.001	8.5 (1.2)
Support information (footer and summaries)	8	10	7.9 (1.8)	9.3 (1.2)	<0.001	8.4 (1.7)
Script and dialogs	7	9.5	7.5 (1.6)	9.0 (1.3)	<0.001	8.1 (1.7)
<b>Usefulness of the video:</b>						
It complements classroom theoretical-practical training	10	10	9.1 (1.2)	9.4 (1.0)	0.061	9.2 (1.2)
It is a good support for classical teaching	10	10	9.2 (1.0)	9.5 (0.9)	0.119	9.3 (1.0)
It allows actual practice visualization	9	9	8.6 (1.6)	8.7 (1.2)	0.647	8.6 (1.4)
It is useful for learning communication techniques	9	9.5	8.9 (1.6)	9.0 (1.2)	0.600	9.0 (1.2)
It is a useful tool to apply in other classes and training sessions	10	10	9.0 (1.3)	9.2 (1.0)	0.064	9.1 (1.2)
<b>Personal assessment, comments and suggestions:</b>						
General punctuation of the video	8	9	8.2 (1.0)	9.1 (1.0)	<0.001	8.5 (1.1)

n=number of students, M=mean; SD=Standard deviation

## DISCUSSION

Visual learning tools like images, diagrams, flowcharts or videos, increase high-order thinking skills in students.<sup>17</sup> In active learning classes, students engage more and are involved in the learning processes that lead to get a better analysis, synthesis and evaluation of the subject.<sup>18</sup> Educational videos are a proper tool as a complementary material for the teaching of PPS. They could be used for training students and health care professionals because they facilitate the acquisition of the necessary skills, showing real performance in a practical and visual manner.

We observed in our study that both undergraduate students and professional pharmacists who attend to Master classes are interested in expanding their knowledge about PC, appreciating the usefulness of a video as a teaching tool and its compression and clarity were highly valued. Its use was positively valued by the students, especially as support of the classical teaching, especially by professional pharmacists.

Patient-simulated videos showing professional practice facilitate imagining true patients and support a comprehensive approach that fosters better memory and learning. The clinical patient-simulated video method is considered more practical and clinical.<sup>19</sup>

Both group of students, undergraduate students and professional pharmacists, had a high score for the item "video is a complement to theoretical-practical training" ( $9.1 \pm 1.2$  vs  $9.4 \pm 1.0$ ,  $p=0.061$ ). This should be taken into account knowing that audiovisual material is used as support material for classical teaching. Using videos during lectures could increase teaching quality, improve the practical training, offer many benefits for the students and for the faculties and may complement and partly replace conventional classes.<sup>20</sup>

Dong and Guo<sup>18</sup> examined the length of time students watched streaming videos, indicating that the best length was 9-12 min, so our 10-min videos were considered appropriate as the item about "Suitable duration" showed. In addition, the possibility of pausing the different scenes in order to explain every detail, allowed the teacher to highlight the most relevant aspects of each section. As other studies concluded, these videos were a combination of a theoretical lesson and a patient case as an active-learning strategy,<sup>21,22</sup> so students pay more attention.<sup>23</sup>

The creation of a scenario in which communication skills can be observed produces greater results in communication skills when compared to real patient.<sup>24</sup> Simulation will be used to describe training where external actors, who have been trained in simulation techniques, take on the patient role.<sup>25</sup> Patient-centered

communication is increasingly being recognized as an essential physician competency and improvement of this skill is expected at all levels of training and practice.<sup>26</sup> We decided to focus these videos on PPS for several reasons. Dispensing and minor ailment services are the most demanded services in the pharmacy, they are part of daily work in a community pharmacy, so it is important that students learn how to offer them in a proper manner.<sup>27</sup> On the other hand, medication adherence management and MRF services can benefit from these learning tools due to its characteristics and complexity.<sup>28,29</sup> Interventions on adherence and MRF need to enhance communication with the patient, as shown in several studies that demonstrated a correlation between effective pharmacist-patient communication and improved patient health outcomes, like affecting physical and emotional health, patient understanding of medical issues, adherence to treatment regimens and patient satisfaction with healthcare.<sup>30-32</sup> In addition, due to the behavioral characteristics of adherence and MRF, they require learning of theoretical models of behavior change, this models can be taught easier using a practical case.

However, some aspects of the videos should be improved as shown in the item "It properly simulates the reality". Nevertheless, the undergraduate students reported the lowest score for simulation suitable to reality but professional pharmacists thought that the situation described was adequate ( $6.6 \pm 2.3$  vs  $8.5 \pm 1.5$ ,  $p < 0.001$ ). Therefore, professional performances maybe are necessary to perceive the real practice in community pharmacies.<sup>33</sup> For the same reason, professional pharmacists scored "*script and dialog*" significantly higher than undergraduate students.

Within the context of PC, video as a teaching tool continues to have an impact on higher education, on the role of the student and challenging the learning sciences.

## CONCLUSION

Educational videos are an adequate tool for teaching PC, adding new layers of learning to Professional Pharmacy Services. They were considered as a good addition to regular classes; simulation of reality should be improved in the future when making new videos. The high assessment obtained motivates the Research Group in Pharmaceutical Care and the Chair of Pharmaceutical Care to continue working in this line of teaching and to explore new tools that address the practice of Professional Pharmacy Services.

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## CONFLICT OF INTEREST

All authors report no conflicts of interest. The study has not been funded. The study is exempt from submitting to the IRB.

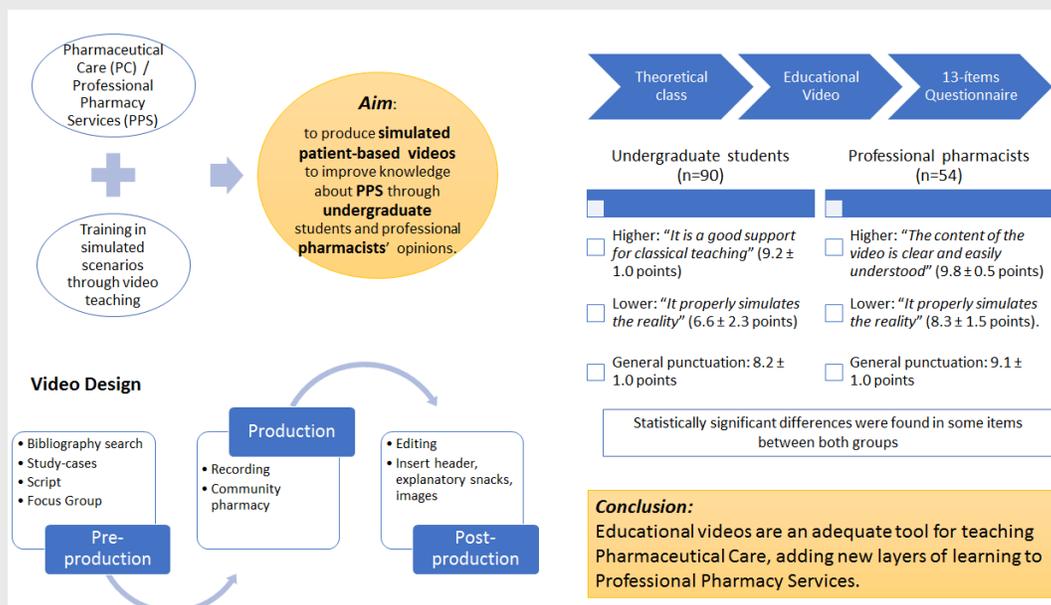
## ABBREVIATIONS

**DPI:** Dry powder inhaler; **EHEA:** European Higher Education Area; **FIP:** International Pharmaceutical Federation; **MRF:** Medication Review with Follow-up; **PC:** Pharmaceutical Care; **PPS:** Professional Pharmacy Services; **SD:** Standard deviation.

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## PICTORIAL ABSTRACT



### SUMMARY

Educational Videos could be a new tool that is an adequate complement for teaching about pharmaceutical care and Professional Pharmacy Services. Students of Pharmacy could acquire an active role in the future and professional pharmacists could improve their skills.

### About Authors



**Zarzuolo Maria Jose:** Doctor in Pharmacy. Teacher of the Official Master's Degree in Pharmaceutical Care at the University of Granada, Spain. Member of the Pharmaceutical Care Research Group.



**Valverde-Merino Maria-Isabel:** Ph.D Candidate. Master in Pharmaceutical Care. Specialist in Hospital Pharmacy. Member of the Pharmaceutical Care Research Group.



**Fernandez-Rodriguez Maria:** Doctor in Pharmacy. Master in Pharmaceutical Care. Member of the Pharmaceutical Care Research Group.



**Amador-Fernandez Noelia:** Ph.D Candidate. Master in Pharmaceutical Care. Member of the Pharmaceutical Care Research Group.



**Martinez-Martinez Fernando:** Professor of Physical Chemistry and Pharmaceutical Cre. Director of the Maria Jose Faus Dader Chair of Pharmaceutical Care. Principal Investigator of the Pharmaceutical Care Group.

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