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Research article

Nursing education in the pandemic: A cross-sectional international study

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ABSTRACT

Background: The COVID-19 pandemic has raised the need for distance learning in nursing education. The necessary precautions have been taken in nursing schools involving the application of various restrictions, including the suspension of face-to-face classes and the closure of educational institutions, and this has had a profound effect on nursing educators and nursing students alike.
Objectives: The study seeks to answer the following questions:

1) What are the characteristics of distance nursing education during the pandemic?
2) What are the nursing students' views on online education during the pandemic?
3) What difficulties have been experienced by nursing educators during the pandemic?
4) What are the views and suggestions of nursing educators in regards to nursing education during the pandemic?

Design: descriptive, cross-sectional, multicentered and international study.
Settings: An online survey was completed by 30 nursing educators working in establishments listed among the top 60 highest-ranked nursing schools in the world.
Participants: nursing educators in undergraduate nursing programs.
Method: An internet-based survey comprising open-ended and multiple choices questions was disseminated to 60 nursing schools on the 2020 QS World University Ranking list.
Results: Survey responses were received from 30 nursing schools in 30 countries. Since the announcement of the pandemic, the structure of distance education in nursing has taken different forms from one country to another, and nursing educators and students alike have encountered a diversity of problems during this process. The findings of the present study reveal that 65% of the nursing educators thought that they had been caught unprepared for the COVID-19 outbreak, 44% thought that the nursing program outcomes had been achieved through distance education, and 48% encountered Internet-related problems.
Conclusion: We believe that the present study will (i) aid in the decisions of nursing educators considering a transition to distance education, provide suggestions to those that have already made such a transition or inspire those seeking to improve the effectiveness of practice in obligatory cases, (ii) serve as a guide for educational institutions, and (iii) contribute to the taking of precautions to counter potential problems.

1. Introduction

COVID-19, a virus that causes severe pneumonia, spread all over the world in a very short time after emerging initially in Wuhan, China (Huang et al., 2020; She et al., 2020). After reports that the total number of human infections had reached 118,000 in 114 countries, and the 4291 people had lost their lives as of 11 March 2020, COVID-19 was officially recognized as a pandemic in late 2019 by the World Health Organization (World Health Organizations, 2020). The COVID-19 pandemic has had a global impact on all walks of life, and has led to changes in many areas, and education is no exception.

The first education-related measures taken around the world were the closure of schools and the suspension of education (Sahu, 2020; Viner et al., 2020; Wang et al., 2020), although this solution soon proved to be unsustainable once the depth of the COVID-19 pandemic came to be understood. Subsequently, efforts were made in some schools to take advantage of distance learning opportunities, while other schools elected to defer the spring semester of the 2019–2020 academic year to the

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following year (Domenico et al., 2020; Negi and Parel, 2020; Viner et al., 2020).

The challenges brought by the COVID-19 outbreak have been felt also in nursing education (Dewart et al., 2020; Lira et al., 2020; Swift et al., 2020; Yancey, 2020), with nursing departments in universities all over the world opting to close or to switch to distance learning (Lazenby et al., 2020).

The transition to distance learning has raised the need for faculties and nursing educators to develop grading strategies for the evaluation of student performance, and the generation of new strategies to encourage student engagement (Jackson et al., 2020). The structure of academic semesters has also changed, with nursing educators being obliged to take responsibility also in technical and administrative issues, including the design and delivery of lessons, interactions, consultancy, registration services, learner support systems and assessment-evaluation systems. The urgency at which new systems have had to be created and implemented has led, inevitably, to deficiencies in the provided education and some other negative effects (Brooks et al., 2020; Owusu-Fordjour et al., 2020; Sahu, 2020).

Literature contains numerous reviews, commentaries and short communications conveying the experiences of nursing schools and nursing education during the pandemic (Lazenby et al., 2020; Swift et al., 2020), although there has to date been no comprehensive study of how the world's leading universities in nursing education and practice are managing this process, and what kind of difficulties nursing educators have encountered during this period.

To the best of our knowledge, this is the first multicenter, cross-sectional and quantitative international study providing an overview and assessment of the educational programs of nursing faculties amid the COVID-19 pandemic.

The following research questions were investigated:

- What are the characteristics of distance nursing education during the pandemic?
- What are the nursing students' views on online education during the pandemic?
- What difficulties have been experienced by nursing educators during the pandemic?
- What are the views and suggestions of nursing educators in regards to nursing education during the pandemic?

2. Methods

2.1. Study design

A cross-sectional, multicentered, international study.

The study made use of the Checklist for Reporting Results of Internet *E*-Surveys (CHERRIES) (Eysenbach, 2012).

2.2. Study population and sample

A list of nursing departments was obtained from the QS World University Rankings website (www.topuniversities.com) using the "nursing school" subject and "overall score" ranking indicators to determine the study population. Universities with an overall score of 79.9 minimum to 95.3 maximum were included in the study, and the study sample comprised the nursing educator representatives of the schools whose e-mail address was available on the selected nursing schools' website.

Recruited for the study were 30 nursing educators from different universities who met the following criteria: (a) employed in the selected universities, (b) working knowledge of the English language and (c) volunteering their participation in the study. Universities that were not on the 2020 QS World Ranking list were excluded from the study.

2.3. Data collection tools

A web-based survey tool was used for the application of the questionnaire, which was prepared by the author in the light of an extensive literature review. The questionnaire was reviewed by a group of experts who are actively involved in nursing education, although no subsequent changes were made.

The adequacy, appropriateness, clarity, usability and technical functionality of the electronic questionnaire were pilot tested by a sample group of nursing educators with a working knowledge of English ($n = 6$) who reported no difficulties in answering the questions. The questionnaire consisted of 42 closed-ended and three open-ended questions, including 15 closed-ended questions about characteristics of distance education; two open-ended questions about the students' experience; and 27 closed-ended and one open-ended questions about the nursing educators' views and suggestions. The questionnaire was five pages long with 10 questions on each page. All questions featured a non-response option, such as "not applicable" or "rather not say", and the selection of one response option was enforced.

2.4. Data collection

Data were collected between December 2020 and February 2021. An online survey was generated by using the jotform survey approach and sent to the nursing educators' email addresses. The online survey took approximately 10–15 min to complete.

2.5. Data analysis

IBM SPSS Statistics (Version 23.0. Armonk, NY: IBM Corp.) was utilized for the statistical analysis. Descriptive statistics, such as numbers and percentages, were used for the evaluation of the data. Both the completed and partially completed questionnaires were analyzed.

2.6. Ethical consideration

Approvals were obtained from the Ministry of Health COVID-19 Scientific Research Evaluation Commission and the University Ethics Commission. Personal information related to the respondents and the study data were collected as per the requirements of the Declaration of Helsinki. The respondents were adequately informed of the aims, methods and expected benefits of the study, and were informed that there was no incentive to participate in the study, and so they could withdraw at any time without having to state a reason.

3. Results

Participating in the study were a total of 30 nursing educators from 30 universities around the world whose student bodies and academic staff ranged in size from 250 to 2000 and from 25 to 200, respectively.

Of the nursing educators, 81% were mostly conducting online classes from home, whereas 19% were continuing to provide education in their faculty. The platforms preferred by the nursing educators for their online classes were Zoom (50%), Microsoft Teams (17%), BlueJeans (5%), Skype (5%), Webex (2%) and other (21%), respectively. The methods used other than "hands-on" clinical experience or face-to-face learning included simulation (virtual reality simulation or computer-based simulation) (61%), high-fidelity manikins (12%), telehealth (10%) and other (17%) (e.g. case studies, hybrid online zoom and limited in-person simulations, face-to-face clinical skills, etc.). The length of online classes varied from university to university. The nursing educators noted that the duration of online classes ranged from 20 min to six hours a day. In respective order, 29%, 21% and the remaining 50% of the respondents stated that their classes lasted for 45 min, an hour and varying durations (20 min/day, 30 min/day, 50 min/day and 120 min/day).

The methods used by the respondents in online education were

uploading video (23%), uploading lecture notes in PPT or PDF format (23%), a combination of the two (18%), asynchronous (17%), synchronous (17%) and "flipped" classroom/synchronous (2%) activities. When asked if they had experience in the development of programs or curricula for online courses, 43% of the nursing educators stated that they had experience, 35% had no experience and 22% had limited experience. Furthermore, 60% of the educators used the letter grading system, 36% used a pass/fail system and 4% used a numerical grading system for the assessment of student performance.

In response to the question of how the pandemic had affected the quality of education, 50% answered "no change", 27% said "decreased", 15% said "increased" and 8% said, "both increased and decreased in different aspects". While 84% thought that the pandemic had not affected the international ranking of their school, 8% stated that their international ranking had increased, 4% stated that their ranking may have been affected and 4% were not sure.

The characteristics of distance nursing education during the pandemic were evaluated. Of the total study sample, 72% were subject to an education policy/guidelines related to the provision of distance education; 50% had received training in distance education/learning approaches; 67% were employed in institutions that had prepared and published guides on their websites providing detailed information to students about their rights, roles and responsibilities relating to distance education; and 81% reported that their institutional virtual library had been opened to students, giving them access to information and improving their study skills (Table 1).

When questioned about the views of their students on online education, the nursing educator respondents stated that the students were satisfied with the different applications used in online platforms, and their ability to keep them active (e.g. breakout rooms, short videos and interactive lectures, etc.) and the convenience in attending the classes. The student complaints raised, on the other hand, were related to such issues as the lack of face-to-face training, the lack of in-person interaction and Internet connection problems (Table 2).

During the pandemic, 40% and 48% of the nursing educators had experienced problems with Internet usage and Internet connections in online education, respectively. Among the other issues mentioned, they partially encountered problems of student participation in the course (54%), ensuring that the curriculum, which had been designed for face-to-face education, had been appropriately adapted to distance education (44%), and issues related to the provision of exams to undergraduate students (65%) (Table 3).

Some suggestions made by the nursing educators for improving nursing education during the pandemic are presented in Table 4.

In an evaluation of the views of nursing educators on nursing education during the pandemic, 65% of the respondents believed they had been caught unprepared for the COVID-19 outbreak. While 44% indicated that the nursing program outcomes had been achieved through distance education, 40% stated that the expected outcomes had been only partially attained, 40% said that distance education had positively affected their students' theoretical knowledge and only 8% said that distance education had contributed to the students' professional practice skills. Just over half (52%) of the respondents stated that online courses should continue once the pandemic is over, 44% stated that they should

Table 1
Characteristics of distance nursing education during the pandemic.

Questions	Yes (%)	No (%)	Partially (%)
Does your program have an education policy/ guideline regarding distance education courses?	72	8	20
Is the validity and reliability of the measurements and evaluations used in distance education ensured?	28	16	56
Have nursing educators been trained in processes related to distance education-learning components (management, communication, learning, technology, assessment, student-centered learning-teaching approach, etc.)?	50	4	46
Has the institutional virtual library had been opened to students, giving them access to information and improving their study skills?	81	0	19
Has there been a change in the attendance of the students to the course?	4	48	48
Are guides prepared and published on the institution's website, providing detailed information to students about their rights, roles and responsibilities regarding distance education?	67	19	14
Are remedial programs implemented for students who do not have access to digital media?	40	35	25
Have the opinions and complaints of students and instructors about distance education been evaluated?	72	0	28
Did it take time for students to adapt to the lessons taught online?	60	8	32
Are active and interactive teaching methods and techniques applied for each course?	44	4	52

Table 2
Nursing students' views on online education during the pandemic.

The topics that the students were most satisfied with in online education	Common student complaints related to online education
• Convenience in attending classes • Online breakout sessions, presentations led by students • Supportive faculty across all topics • Interactive lectures with lots of time for questions and answers • Didactic lectures • The quality of education was good despite being online for the pandemic. Innovative teaching strategies of the faculty when forced suddenly online. • Clearer instructions for assignments • Good short video lectures and synchronous classes.	• Students prefer face-to-face courses over online courses. • Books and Internet connections problems • Missing educators' labs. Uncertainty. Lack of ability to mix with other students • Suspension of clinical placements • Not being able to go to the hospital for clinical practice • Need for clinical experience, too much online asynchronous learning • Zoom fatigue. As all didactic lectures are via zoom, personal interaction is lacking. • Online and simulated learning for clinical practice is not as good as face-to-face. • Difficulty in managing the virtual environment and being overwhelmed by it.

Table 3
Difficulties experienced by nursing educators during the pandemic.

Issues encountered by nursing educators with in online education	Yes (%)	No (%)	Partially (%)
Internet usage	40	32	28
Internet-related problems (slow operation, sudden shutdown, sound problems, etc.)	48	20	32
Lack of a suitable environment at home	36	40	24
Evaluation of students' homework	8	68	24
Counseling students	15	38	47
Examination of undergraduate students	8	27	65
Use of software used in online support services	20	48	32
Ensuring the participation of students in the course	19	27	54
Communicating with students	12	44	44
Ensuring dominance in the class / managing the class	8	56	36
Getting feedback from guidance and assignments given to students	4	58	38
Designing lessons that are interesting and that facilitate learning in distance education	16	40	44
Diversifying teaching methods compatible with distance education	25	25	50
Producing practical solutions to problems that arise in distance education	24	32	44
Ensuring that the curriculum designed for face-to-face education is adapted to distance education	28	28	44

Table 4
Nursing educators' views on nursing education during the pandemic.

Questions	Yes (%)	No (%)	Partially (%)
Do you think nursing program outcomes have been achieved with distance education?	44	16	40
Do you think distance education has a positive effect on students' theoretical knowledge?	24	36	40
Do you think distance education contributes to students' professional practice skills?	8	44	48
Do you think that the teaching methods and techniques used in distance education support the active participation of the student in the course?	36	12	52
Does spatial distance affect your interest in the lesson negatively?	8	38	54
Do you think students are more successful than normal in online exams during the pandemic period?	46	38	16
Do you think you were caught unprepared for the COVID-19 outbreak?	65	8	27
Do you think online courses should be included in education when the pandemic period is over?	52	4	44
Do you think that online education is sufficient to meet the cognitive learning domain needs of nursing education?	48	32	20
Do you think that online education is sufficient to meet the affective learning domain needs of nursing education?	24	39	37
Do you think that online education is sufficient to meet the psychomotor learning domain needs of nursing education?	5	59	36

Table 5
Nursing educators' suggestions on nursing education during the pandemic.

- Be flexible, be supportive to students and staff, recognize that it is not business as usual and that things will be different, expectations need to be lower, there is a lot going on, better links needed with hospital
- Utilize a creative approach in teaching and learning via virtual platforms, e.g.: poster exhibitions, presentations led by students, group projects etc.
- Make sure you are holding the students accountable for attendance and for turning assignments in on time.
- Take advantage of available online materials
- Keep the student interface directly in mind as you plan activities. – Flipped classrooms for difficult/dry content, which reduces "seat time" for students, and can enhance their learning. – Many faculty have never had to re-consider approaches in the synchronous Zoom environment. I knew what I was in for, and took over 100 clock hours to devise a course that my 49 students would enjoy and would learn from, although I have had 2.5 decades of teaching asynchronously/synchronously using distance education techniques. – Huge classes in Zoom classrooms are a nightmare for everyone. I had 49 students in my quality and safety course. I have some faculty colleagues who had over 500 students in their sections – a ridiculous workload. – Administrators lowered the "passing" threshold during the pandemic. This may come back to bite us when students who "pass" are not successful in the licensing examinations. – New faculty, typically poorly mentored, were likely really flounder during this time. I wonder if these situations will impact on novice faculty members' willingness to return for Year #2 of teaching. – Zoom environments mean that the natural "mingling" of junior and senior students isn't happening – to the detriment of both.
- Use of emerging technological modalities like iHuman, EHR Tutor, online learning game sites, EasyAuscultation.com, Evolve Elsevier tools, and more. Working with other faculties to share ideas and offer support. Also mental health support sites for students struggling with personal/family issues during the pandemic that overflow into class or affect their academic performance. Development of more simulations.
- Ask the students to help devise solutions.

be partially included and 4% stated that they should be abandoned (Table 4).

4. Discussion

Distance education, which is an interdisciplinary field that makes pragmatic use of existing technologies to eliminate the boundaries between the learner, teacher and learning resources, has become mandatory due to the COVID-19 outbreak (Brooks et al., 2020). Nursing programs have been rapidly adapted to online formats, with special arrangements made for the provision of lectures and learning modules, online textbooks, flipped classrooms and group works within a web-based learning approach (De Tantillo and Christopher, 2020).

The switch to online learning in nursing education has had a significant impact on the educational role of the nursing educator, as most nursing educators had little or no experience in the development of curricula for online courses (Nashwan et al., 2020) at the time of the outbreak. Concurring with the findings of previous studies, the nursing educators in the present study reported having only limited experience in the development of programs/curricula for online courses. Furthermore, in attempting to rapidly adapt to the early-stage informal digital learning experience, nursing educators encountered problems in several areas, related mostly to their technical competence and infrastructure (Table 1) and they also encountered difficulties in preparing exams for the assessment of students, and ensuring student participation in online classes (Table 3).

The sudden and rapid transition to distance education has had advantages and disadvantages also for students. Studies of the experiences of nursing students with online education during the pandemic have revealed that most students have experienced difficulties with online learning (Ali et al., 2020; Kürtüncü and Kurt, 2020). In the present study, the nursing educators reported that aside from technical problems, the students most commonly complained about there being too much online asynchronous learning (Table 5). In contrast, the students were satisfied with the ease of participation and the different applications used in online education, such as short videos, lectures and innovative teaching strategies (Fig. 1). As such it is highly likely that the features of online education that are deemed successful will continue to be included in education plans in the future.

Among the most common suggestions of educators for the development of nursing education during the pandemic was the provision of infrastructure and technical support services for synchronous and asynchronous teaching approaches to both students and educators. This is in line with the findings of previous studies, and indicates that nursing educators should receive in-service training in the use of distance education technologies. It is further emphasized that educators need to find ways to close the theory-practice gap associated with distance education, ensuring the development of clinical skills in nursing students, providing alternative learning environments and supporting their efforts to improve themselves (Kahyaoğlu Süt and Küçükkaya, 2017; Şanli, 2021; Vatan et al., 2020). Programs should be arranged to include distance education, taking into account the nursing educator core competencies (World Health Organization, 2016; National League for Nursing (NLN), 2002; Fitzgerald et al., 2020; Berland et al., 2020), for which the necessary support should be provided to ensure that nursing educators make optimum and efficient use of open and distance learning systems.

The transition of all nursing branches to online education during the pandemic has had a marked effect on the cognitive, behavioral and affective learning domains of nursing education. Traditionally, the mastery of these domains of nursing education has been achieved through structured health education (Ibrahimoglu et al., 2019). In the present study, 32% of the respondents thought that online education failed to meet the cognitive learning domain needs of nursing education, 39% thought online education failed to meet the affective learning domain needs of nursing education, and 59% thought that online education failed to meet the psychomotor learning domain needs of nursing education (Table 4). It is apparent that students have been unable to attain the necessary psychomotor skills through online training during the pandemic, due particularly to the need to comply with social distancing rules. Achieving the targeted learning outcomes of both practical and theoretical courses is essential, and so this should be kept in mind when selecting the teaching methods to be applied under

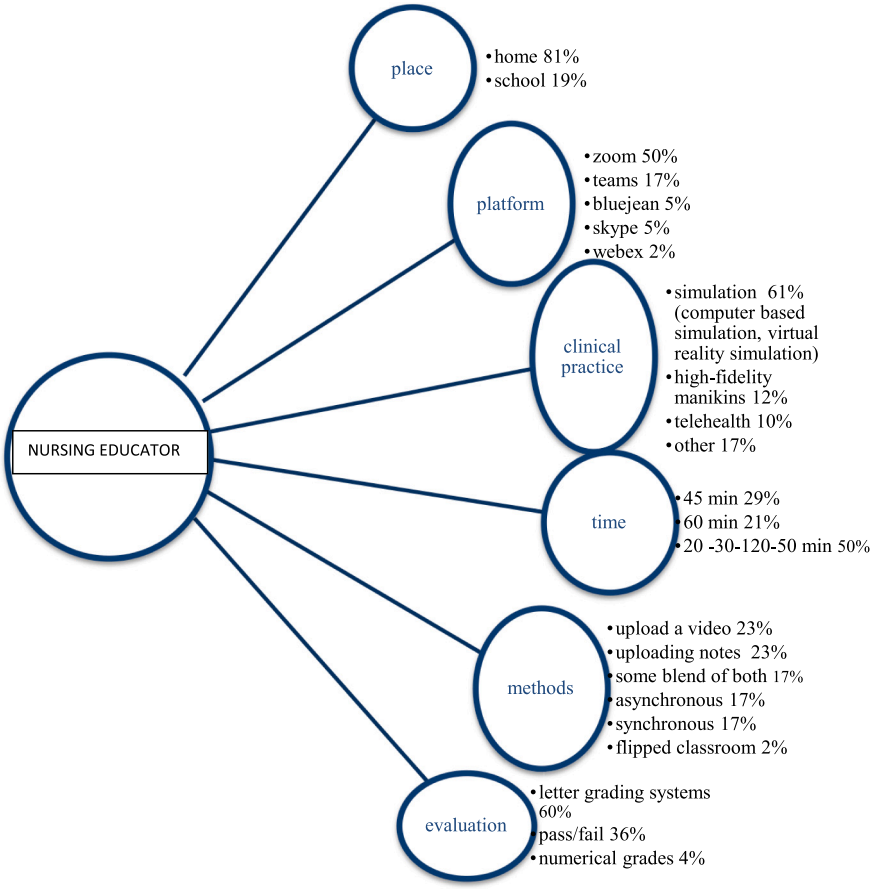

Fig. 1. The structure of online nursing education in the COVID-19 pandemic.

pandemic conditions. Accordingly, it can be stressed that creative, flexible and supportive learning processes should be adopted for nursing students.

Universities seek to gain prestige with a view to attracting successful students, academic staff and administrators. Prestige reflects the opinions and thoughts of stakeholders with different expectations (Topaler and Ayvaz-Çavdaroğlu, 2021; Breznik and Law, 2019). In the present study, the majority of the respondent nursing educators believed that the international ranking of their school had not been affected by the pandemic, while 27% thought that the quality of education had decreased and 15% thought that the quality of education had increased. This suggests that online education alone cannot be considered sufficient for success in such applied fields as nursing education. When providing distance education, its advantages and disadvantages should be considered and plans should be made accordingly (Chick et al., 2020; Zhang et al., 2020).

The following activities will contribute to a more rapid adaptation to this process, making arrangements to turn the disadvantages of distance education into advantages, developing more effective educator-student communication techniques, considering feedback from students, and determining and meeting the expectations from web-based education (Kahyaoğlu Süt and Küçükkaya, 2017; Keskin and Özer Kaya, 2020). Education during and after the pandemic should be considered and planned together, and should include methods that are suitable for the learning objectives, achievements and outcomes, while also taking into account the individual needs of the students and the burden the program will place on them.

In the post-pandemic period, when face-to-face teaching can be resumed, the necessary arrangements should be made for practical courses where possible while maintaining physical distance. Upon the complete return to in-person learning, it should be ensured that online courses are incorporated into educational programs and that nursing programs are made adaptable possible extraordinary situations in the future.

5. Conclusion and recommendations

The results reveal that in the pandemic, the adopted training methods, the length of online courses, the use of online platforms and the student assessment approaches differ from country to country in undergraduate nursing education. Nursing educators and students alike have encountered different problems during this process, and so for the future, the views of nursing educators on nursing education, the difficulties they have encountered and their suggested solutions should be evaluated, and courses should be designed accordingly.

We believe that this study will serve as a guide for future studies aimed at increasing the effectiveness and efficiency of distance education based on the views of nursing educators. To ensure the content validity of the items in future studies we recommend developing a close dialogue with more nursing educators before applying our questionnaire.

6. Strength and limitations

The current study has several limitations. The research data were limited to nursing educators/lecturers working in the nursing departments of 30 universities, and so the results cannot be generalized to all nursing educators around the world. To the best of our knowledge, our study is the first to investigate nursing education at an international level during the pandemic. The main strength of the study lies in its multicentered and international design.

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CRediT authorship contribution statement

Dear Editor, I state that I carefully completed all changes related to the study entitled " Nursing education in the pandemic: a cross-sectional international study" according to the reviewers' queries. Thank you for your valuable suggestions and comments.

Declaration of competing interest

No conflict of interest has been declared by the author(s).

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