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EDITORIAL

Dilemma: Quality or Quantity
in Scientific Periodical Publishing

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Dear Readers, Authors, and Publishers,

The eternal dilemma of quality or quantity affects many areas of human life. One of these areas is the publishing industry. This issue is particularly acute for scientific periodicals (Michalska-Smith & Allesina, 2017; Peng, 2011).

The aim of the study. To analyze the dilemma of the quality or quantity of papers in the publication of a scientific periodical Journal, and to share the four-year experience of publishing the International Journal of Science Annals (IJSA) with publishers, editors, reviewers, and authors.

Undoubtedly, it is important to develop both quality and quantity for any periodical Journal.

However, for scientific periodicals, the dilemma of quality or quantity should be decided definitely in favor of quality.

This is important both for the development of one or another scientific direction, and for a particular person, especially when it comes to influencing him (medicine, biology, ecology, etc.).

The most reputable leaders who have developed their own quality standards are Web of Science and Scopus.

The selection process in Scopus describes the procedure of their strict standards quite responsibly and transparently.

"The Content Selection and Advisory Board continually review titles using both quantitative and qualitative measures. Every year, approximately 3,500 new titles are suggested for inclusion in Scopus, but only 33% of those titles meet the technical criteria. And of those roughly 1,200 titles, only 50% are accepted after CSAB review" (Elsevier, 2021b).

The Scopus ranking of Journals clearly characterizes the priority of quality over quantity.

For example, Ca-A Cancer Journal for Clinicians is ranked number one in Scopus indexed Journals (Elsevier, 2021a). CiteScore Tracker 2021 is 670.3. CiteScore Tracker counts the citations to date (for the current year), and divides this by the number of documents to date. CiteScore Tracker 2021 calculated by Scopus on December 2021 is 71722/107=670.3.

In IJSA, the problem of the quality of papers published in the Journal is clearly regulated by the peer review procedure.

All manuscripts submitted for publication the IJSA are peer reviewed. Manuscripts of the IJSA Editorial Board Member are submitted to the review process on general terms. Each participant in the review process – author, reviewer or editor – is required to declare a possible conflict of interest so that the publisher anticipates the possibility of such influence. The Editorial Office strives to exclude conflicts of interest between authors and reviewers.

The average number of rejected manuscripts is 85%, of which: 40% are rejected during the preliminary evaluation process; 45% are rejected during the peer review process.

At the first stage, the reasons for rejection are: the guidelines of the study have not been followed, the manuscript title is out of scope of the journal, manuscript requirements have not been followed, the manuscript contains stylistic, spelling and syntax errors, plagiarism, etc.

At the second stage, the reasons for rejection are: scientific relevance and practical importance are absent, methodological errors, there is no logic between the sections of the manuscript, etc.

All authors complete the conflict of interest declaration. Authors should disclose at the time of submission any financial arrangement they may have. Such information will be held in confidence while the manuscript is under review and will not influence the editorial decision, but if the manuscript is accepted for publication, the editors will usually discuss with the authors the manner in which such information is to be communicated to the reader. Because the essence of reviews and editorials is selection and interpretation of the literature, journal expects that authors of such manuscripts will not have any financial interest in a company (or its competitor) that makes a product discussed in the manuscript. Journal policy requires that reviewers, associate editors, editors reveal in a letter to the Editor-in-Chief any relationships that they have that could be construed as causing a conflict of interest with regard to a manuscript under review. The letter should include a statement of any financial relationships with commercial companies involved with a product under study.

We welcome genuine appeals to the editor's and the reviewers' decisions. However, authors will need to provide strong evidence or new data in response to the editor's and reviewers' comments. The Journal has developed a template for the replies to reviewers' comments.

Ethical behavior is very important. No author should insist on the publication of his/her manuscript. Respect the opinion of the reviewers and the editor. Rejecting a manuscript can be an important step in improving the quality of your manuscript. The Editorial Board members or the editor may not treat any manuscript or author as biased or favorable.

IJSA is committed to a high standard of editorial ethics. IJSA is the Committee of Publication Ethics (COPE) Member.

The Editorial Office of the Journal denounces plagiarism. KRPOCH Publishing uses the CrossCheck service from Crossref to initially detect possible plagiarism.

If plagiarism is detected in the paper, it is completely removed at any stage.

The IJSA Editorial Office has developed a procedure for removing published papers in case of detection of plagiarism in them after their publication, which is described on the Journal's website.

The Journal Editorial Office denounces the following types of authorship: "Ghost" author, "Guest" author, and "Gift" author. Therefore, the Editorial Office strictly monitors the awareness of the authors about their submission of the manuscript to the Journal, the presence of the contribution of all authors to the manuscript, signed supplemental documents, etc.

Perhaps some Journals have a policy of refusing authors to publish a manuscript based on the authors' low H-index or even their residence in developing countries.

We strongly believe that such a position is not only unacceptable, but also erroneous.

For example, George Huntington only published two medical papers, of which one, produced at the age of 22 describing his eponymous chorea (Huntingdon, 1872) was subsequently eulogized by Osler et al. (1950) who said there are "few instances in which a disease has been more accurately, more graphically or more briefly described".

So, George Huntington's H-index couldn't be higher than 2 in principle. Journals, guided by the selection of articles according to the author's citation index, would not give this author any chance of publishing his work.

IJSA provides immediate open access. All texts are free for all users and (or) institutions they represent. This can greatly increase the likelihood of citations.

The confidence that academics and the public have in the research published in the IJSA relies on the diligence of our peer review process as well as the Editorial Office commitment to ensuring objectivity and high-quality publication.

All manuscripts that have been submitted to the Editorial Board go through a peer review procedure. The reviewers fill out the reviewer evaluation form, which they submit to the IJSA Editorial Review Board.

Reviewers could submit their reviews via the IJSA profile on Publons (International Journal of Science Annals, n.d.).

IJSA publishes manuscripts not only of reputable scientists, but also of those who are just starting their scientific career.

In 2021, the Journal initiated, co-organized, and sponsored the international competition "Blockchain in the Digital Society" (ICBDS-2021) (Kharkiv Regional Public Organization "Culture of Health", 2021a).

This competition was held among masters, graduate students, and young scientists.

In 2022, the Journal will initiate the international competition "Mental Health in the Digital Society" (ICMHDS-2022) (Kharkiv Regional Public Organization "Culture of Health", 2021b).

All winners of the ICMHDS-2022 competition will be able to publish their papers in the next issues of IJSA. There is no fee for entering the competition or for publishing the manuscript for participants.

Conclusions

Scientific periodicals should solve the dilemma of quality and quantity of papers definitely in favor of quality.

Journals should be committed to a high standard of editorial ethics.

Journals should have a clear and precise procedure for reviewing and selecting papers for publication.

Journals should necessarily consider the possible conflict of interest in research between authors, editors, reviewers, funders, etc.

Journals should motivate young talented scientists to publish their manuscripts by providing them with editorial support in the preparation of the manuscript and funding for its publication.

The implementation of these key principles will contribute both to the development of science in general and the Journal in particular.

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SOCIAL AND BEHAVIORAL SCIENCES

Education

SOCIAL AND BEHAVIORAL SCIENCES. Education

ORIGINAL RESEARCH

Development of Educational Media in Assessing the Growth and Development of Toddlers

Authors' Contribution:
A – Study design;
B – Data collection;
C – Statistical analysis;
D – Data interpretation;
E – Manuscript preparation;
F – Literature search;
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Abstract

Background and Aim of Study: *Developmental delays in children are still a serious problem in both developed and developing countries in the world. About 5-10% of children experience developmental delays. The potential to develop the current media in accordance with technological developments and advances in the use of technology-based platforms.*

The aim of the study: to develop a growth and development assessment model to increase knowledge and skills in assessing the growth and development of toddlers and to analyze the implementation of the growth assessment guide model based on android applications.

Material and Methods: *This type of research is design and development research with a mixed methods approach. The steps of development research are carried out using the ADDIE framework (Analysis, Design, Development, Implementation and Evaluation). In using this framework, designers and developers use analysis, design, development, implementation and evaluation as the main stages.*

Results: *The research product is the "GUVI_Tools" application which is an interactive multimedia-based learning media. The implementation of the application showed a significant increase in knowledge before and after using the application and the average application usage assessment was 4.8 (good category).*

Conclusions: *It is hoped that this development program can be used as a learning program and can develop learning media on other basic competencies and can be continued at the stage of testing the effectiveness of the learning process.*

Keywords: *assessment, growth and development, analysis, design, toddler*

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Introduction

The development of each child is unique and the speed of achievement of each child is different (McDevitt & Ormrod, 2010). The time range for achieving each developmental stage is generally quite large, for example a child is said to be normal if he can walk from the age of 10-18 months, so that developmental differences often occur between children of the same age (Roux et al., 2012; Stein et al., 2014).

A child may experience developmental delays in only one developmental domain or more than one developmental domain. General developmental delay or global development delay is a state of significant developmental delay in two or more developmental domains (Bégin et al., 2020). Broadly speaking, the realm of child development consists of gross motor, fine motor, language/speech, and personal social/independence (De Araújo et al., 2021; Urlacher, 2021). About 5-10% of children experience developmental delays. Data on the incidence of general developmental delays are not known with certainty, but it is estimated that around 1-3% of children under the age of 5 years experience general developmental delays (Arnett et al., 2020; Boyatzis & Junn, 2020; De Onis, 2017).

General developmental delays require data/reports or complaints from parents and early detection or screening of child development. Developmental delays in children are still a serious problem in both developed and developing countries in the world (Wang et al., 2019). Previous research has stated that children in 54 developed countries show some symptoms of anti-social behavior disorder which can develop into behavior disorders later in life (Haleemunnissa et al., 2021). The incidence of delays in child development in the United States ranges from 12-16%, Argentina 22% (Lejarraga et al., 2008), and Hong Kong 23% (Wang et al., 2016). This phenomenon also occurs in Canada and New Zealand, where there are 5-7% of children who experience social development disorders (Stein et al., 2014). Meanwhile, developmental disorders in children in Thailand reached 37.1% (Jeharsae et al., 2013) and in India it is around 19.8% (Toldo et al., 2020). This child development delay occurs mostly in Asia and Africa (Grantham-McGregor et al., 2007).

Data on the growth and development of toddlers is needed as an effort to find disorders earlyfor immediate action (Hyman et al., 2020). Early detection of developmental deviations needs to be done to be able to detect early developmental deviations of toddlers, including following up on any complaints from parents about their child's growth and development problems. If deviations are found, early intervention is carried out in the development of toddlers as a corrective action by utilizing the plasticity of the child's brain so that growth and development return to normal or the deviation does not get worse (Boyatzis & Junn, 2020). If toddlers need to be referred, then referrals must also be made as early as possible according to indications. Intervention or the right stimulation will stimulate the toddler's brain so that the development of movement, speech and language skills, socialization and independence in toddlers takes place optimally according to the child's age (Lipkin et al., 2020).

Stimulation, detection and early intervention for toddler growth and development is one of the competencies that must be achieved by nursing students contained in the curriculum (White, 2006). The role of educators is not only as a teacher but also as a mentor, developer and manager of learning activities so that students can achieve learning goals. Educators design learning by considering the objectives, learning theory, characteristics of the material being taught, methods and media or teaching resources (Webster-Stratton & Herman, 2010).

Technology and multimedia that are currently developing have a good impact on educators in developing learning methods and media. The features of the multimedia learning platform form the foundation so that technology-based learning facilities are essential for effective learning. Consistent with cognitive theory of multimedia learning (Johnson & Mayer, 2009). The potential to develop the current media in accordance with technological developments and advances is the use of technology-based platforms. Currently, the use of smartphones has been used by most people, as a means to communicate, media to seek knowledge or something they want to know (Park, 2020; Radgohar et al., 2020).

Several studies on the use of technology applications in the assessment of toddler growth and development have been carried out. Sanitasari et al. (2017) the research design used is applied research, which in this study will apply a computer-aided expert system regarding monitoring the growth and development of infants/early children. Hernanda and Yustanti (2016) in a study on the design of an Android-based toddler growth monitoring application. The advantages of this system, from the data that used to be in the form of a card, now all data on growth and development of toddlers and immunizations/vaccinations are stored both in the database. This prevents data loss and is also more efficient because it can be accessed via a smartphone. This android application provides information and facilitates the user to monitor the growth and development of toddlers.

The aim of the study. To develop a growth and development assessment model to increase knowledge and skills in assessing the growth and development of toddlers and to analyze the implementation of the growth assessment guide model based on android applications.

Materials and Methods

This type of study is research and development with a mixed methods approach (Doyle et al., 2009; O'Cathain et al., 2007). In the conceptual model development phase, qualitative aspects will be more dominant, while mixed aspects (qualitative and quantitative) will be used in the product development and trial phases. In the pilot phase, quantitative aspects are more dominantly used.

This development research aims to design and build an application as a guide for users (students and lecturers) to increase knowledge and skills regarding the assessment of growth, development and stimulation of child development. The steps of development research carried out using the ADDIE framework (Analysis, Design, Development, Implementation and Evaluation). In using this framework, designers and developers use analysis, design, development, implementation and evaluation as the main stages (Rusdi, 2018).

Research Stage
Phase I Research: Analysis. Data sources: In the early stages of developing a guide model for assessing growth and development of toddlers, data was collected based on the results of the initial survey and secondary data derived from literature studies, theoretical studies and survey reports, documents, interviews, while the types of data were quantitative and qualitative. Participants in this stage are lecturers and instructors of pediatric nursing courses and prospective users, namely students majoring in nursing who have received material on growth and development of toddlers.

Phase II Research: Design. The next step is to design the application using the components of an intervention design with elements of the basic theory of learning, the theory of supporting the intervention and the growth and development of toddlers. Describe the addition of explanations for each component that is tailored to the purpose, namely to increase student knowledge about growth and development of toddlers as well as skills in assessing growth and development. Each stage/component will describe a number of instructions that lead to the formation/development of devices or attributes that support the establishment of an effective and efficient intervention system. Each instruction is designed based on the basic assumptions and basic and supporting theories from the results of the literature (theoretical) and empirical analysis in stage one.

Phase III Research: Development. The method of developing a guide model by conducting a theoretical study that is suitable for development research and pediatric nursing topics for assessment of growth and development as well as stimulation and collaborating with IT experts for product development.

Phase IV Research: Implementation. The implementation process is to validate by experts, namely doctors/nurses, research development experts and IT experts. Validation includes the content of the product, suitability for purpose, and ease of use.

Furthermore, a trial is carried out with the following stages:
a) One-on-one trials were carried out by involving a student who was attending a pediatric nursing course as well as a tutor. Researchers and users pair up one by one and interact to conduct practice evaluations of applications that have been validated by experts, researchers will interact with users and observe what users are doing, recording all perceptions and ratings given by users. The participants in this one-on-one trial are 3 people. The instruments used were interview protocols, data collection techniques by interviewing

verbal and body language data types and observing gesture/sign language data types, social interactions, actions, atmosphere and physical environment, sensations. The data analysis technique is a qualitative analysis technique with the spiral method to obtain narrative information that focuses on aspects of the weaknesses and deficiencies contained in the product.
b) Small group test. Researchers conduct pretest and posttest to see indicators of the impact of product use, assess differences in students' knowledge and skills in using the application. During the process, researchers will pay attention to the efficiency of time and resources involved in using the product. Researchers conducted pretest and posttest to see indicators of the impact of product use, assess differences in knowledge and skills of students and lecturers in measuring children's growth and development as well as selecting the right stimulation. During the process researchers will pay attention to the efficiency of time and resources involved in using the product.

The participants involved in the small group evaluation are 10-15 students who are selected randomly. The data generated are qualitative and quantitative data. Qualitative data are analyzed for follow-up to improve product quality, while quantitative data obtained from questionnaires and observations will be analyzed statistically.

c) Field trial/large group. Participants in the large group/field trial were prospective users with a purposive sampling technique totaling 30 people with inclusion criteria: students who have or are currently taking pediatric nursing courses, have smartphones and understand their use.

The use of the instrument is almost the same as the small group trial. The instrument used is a questionnaire to see the impact which is carried out through pretest and posttest. The pretest is to see the participants' initial ability and the posttest is to show the ability after using the developed product. The observer at this stage is carried out by the researcher.

Quantitative data in the large group trial phase follows the following steps: Describing the data using descriptive statistics and answering the hypothesis using inferential statistics (differential test/t-test).

Results
Analysis Stage
Needs/Problem Analysis. The needs analysis process is based on application requirements to improve students' knowledge and skills in assessing the growth and development of toddlers in a simple way and can be done anywhere and anytime. Problems that can be identified: growth and development assessments require a large number of forms and will be used when conducting an age-appropriate assessment of the child. Analysis of user characteristics is a student majoring in nursing who is currently or has received material on the assessment of growth and development of toddlers who have smartphone facilities.
Contextual Analysis. Contextual analysis is carried out with field visits to ensure that these problems really exist

and identify things in more detail so that predicting product interactions with the target will be easier to design. The grid of questions made based, there are 6 (six) factors that affect contextual problems, namely:

1) stakeholders – those involved in the implementation are lecturers of pediatric nursing courses;

2) target group – students majoring in nursing who are currently or have received growth and development assessment materials;

3) physical context – the must-have facilities are servers for the use of android-based applications and smartphones for prospective application users (students);

4) organizational policy context – the nursing department of the Health Polytechnic of the Jambi Ministry of Health has the independence in making changes, especially for the development of teaching media that aims to improve the quality of learning;

5) educational context – changes made by considering the needs and technological developments;

6) eligibility – the developed application has advantages, namely insert material and procedures in the application that are used as material for student learning and there is an assessment following the growth and development assessment steps (Rusdi, 2018). Weaknesses that can be identified are the internet network which must always be available. Opportunity: Poltekkes, Jambi Ministry of Health has a server that can be used and all students and lecturers have smartphones.

Design Stage

The results of the analysis of problems that have been studied practically and theoretically and have been deemed worthy of being used as research objectives, the researchers and the team together design and build products to solve problems. This stage will produce a design or initial prototype of the development product in the form of a storyboard, namely a storyboard in the form of a rough sketch where there are sequential images in the form of a series of stories consisting of several pages.

Development Stage

The development of product prototypes in collaboration with IT experts resulted in an android-based application called GUVI_Tools, which also explained the application title: Assessment of toddler growth and development. The application contains a menu of materials, growth and development assessment, history and assessment recap, about the application.

The material menu is an advantage in this application which contains material about growth, development and development, this material is useful as a learning medium for users, the material is equipped with videos on how to measure growth to facilitate user understanding.

The growth assessment menu requires data input by the user containing user biodata, toddler biodata for which growth and development measurements will be carried out, toddler weight and height data, as well as a developmental assessment format according to the toddler's date of birth input. After inputting the data, the user will get results in the form of: the current age of the toddler, the classification of growth status (nutritional status category): which consists of very underweight, underweight, normal weight, and overweight. The recommended growth assessment results will also be displayed so that users can find out the actions taken on toddlers based on the results of the growth assessment. The results of the assessment of toddler development will be displayed according to the inputted data, namely development according to the age of the toddler, deviant development and dubious development. The recommended results will also be displayed. A return visit schedule for growth and development assessment will appear at the end of this assessment menu with the aim that users can find out and provide information to the toddler's family when to return.

Implementation Stage

The prototype development stages consist of expert validation, one-on-one test, small group test and field test stage. The evaluation is carried out by IT and child health experts/experts as well as material experts. The evaluation results in the form of qualitative data or a description of the suggestions given by the experts will be used to revise the design of the overlay intervention. Evaluation/revision can be done by reviewing the design, development and analysis processes.

The teaching media application developed will be validated by practitioners to get input from the perspective of experts in this development: material experts, namely pediatric nurse specialists and 1 nutritionist each. There are aspects of material assessment, educational aspects and communication aspects.

The results of the expert validation of child nursing materials can be seen in Table 1, nutritionist material validation can be seen in Table 2, media expert validation results can be seen in Table 3.

Trials:

a) One-on-one trial. Preparation, preparing all the equipment needed: Instruments, learning media, application manuals and note-taking tools. Submission of materials related to the content and use of the product: The concept of toddler growth and development, the need for stimulation of toddler development and simulation of the use of applications/products. Implementation of product trials: providing opportunities for users/participants to use the product, Assessment through observation, Documentation of assessment results, Revising the results of observations and assessments by users.

The one-on-one trial was carried out by involving 3 (three) students who had been determined by the researcher based on the criteria for having received the material and following the pediatric nursing course. Researchers and users pair up one on one and interact to conduct a practice evaluation of the growth and development assessment application based on Android, researchers interact with users and observe what users are doing, recording all perceptions and assessments given by users. Researchers provide an explanation of the application and its use. Users (students) can use the application properly starting from installing, registering

and then inputting assessment data. When the trial was carried out there were discrepancies in the application, namely when assessing toddlers aged 3 months 24 days, the display of the developmental assessment form leading to the form for the assessment of 6 months of age, this error has been revised and the application can be continued for small group trials.

b) Small group trial. This small group assessment is a transitional assessment between individual assessment and field/large group testing. The purpose of the assessment in this group is to ensure that the product can really be used properly and to see the temporary impact of using the product. Researchers do not interact with users and only as observers. Researchers will respond if there are serious problems.

Table 1
Results of Expert Validation of Child Nursing Materials

Statement	Value scale				
	1	2	3	4	5
Material Aspect					
The suitability of the material with the concept of growth and development				+	
Concept truth					+
Order of presentation of material					+
The images used are in accordance with the material					+
Educational Aspect					
Material suitable for educational purposes				+	
Content clarity					+
Indicator clarity					+
The suitability of the image given to clarify the material					+
Use of each material				+	
Communication Aspect					
Accuracy of terms					+
Grammatical accuracy					+
Ability to increase user motivation					+
Total score			57		
Average			4.8 (Good Category)		

Table 2
Validation of Nutritionist Materials

Statement	Value scale				
	1	2	3	4	5
Material Aspect					
The suitability of the material with the concept of growth and development as well as stimulation					+
Concept truth				+	
Order of presentation of material				+	
The images used are in accordance with the material				+	
Educational Aspect					
Material suitable for educational purposes				+	
Content clarity				+	
Indicator clarity				+	
The suitability of the image given to clarify the material				+	
Use of each material				+	
Communication Aspect					
Accuracy of terms				+	
Grammatical accuracy				+	
Ability to increase user motivation				+	
Total score			49		
Average			4.1 (Good Category)		

Table 3
Media Expert Validation Results

Statement	Value scale 1	2	3	4	5
Programming Aspect					
Serving menu					+
Instructions for use				+	
Convenience					+
Completeness				+	
Display Aspect					
Letter					+
Use distance					+
Text legibility					+
Picture				+	
Layout				+	
Navigation Keys					+
Color					+
Serving between pages					+
Total score			56		
Average			4.7 (Good Category)		

Researchers conducted pretest and posttest to see indicators of the impact of product use, assess differences in student knowledge and skills in assessing growth and development of toddlers. During the process researchers will pay attention to the efficiency of time and resources involved in using the product.

The results of small group trials were carried out on 15 students, the average time used to manually assess the growth and development of toddlers before using the application was 45 minutes and after using the application only took an average of 15 minutes. All students stated that they enjoyed using the application. The distribution of knowledge data before and after the application was normally distributed, a test of normality was carried out with Shapiro-wilk with p value = 0.432 and after using the application p value = 0.42, then analyzed using paired t-test.

Results of knowledge analysis before and after using applications for assessment of toddler growth and development in small groups can be seen in Table 4.
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Table 4
Results of Knowledge Analysis Before and After Using Applications for Assessment of Toddler Growth and Development in Small Groups

Knowledge	*M*	*T*	*DF*	*Sig.* (2-tailed)
Pre Test	53.3	-14.24	14	0.000
Post Test	78.0			

Note. M – the mean (average); T – the t-test statistic; DF – the degrees of freedom; $Sig.$ – the significance level.

c) Field trials/large groups. Field or large group testing is carried out for product improvement in terms of structure, function and user behavior. Currently there is no interaction between users and researchers to test whether the product can really be operated properly without the presence of researchers. Users are provided with a product user procedure manual. The test used a one-group pretest-posttest experimental research design.

The distribution of knowledge data before using the application using the Shapiro-wilk test of normality with a value of p=0.118 and after using the application the value of p=0.084, thus it can be concluded that the distribution of data is normally distributed. Next, paired t-test analysis was performed.

Results of knowledge analysis before and after using the toddler growth and development assessment application can be seen in Table 5, assessment of application use by large groups can be seen in Table 6.

Table 5
Results of Knowledge Analysis Before and After Using the Toddler Growth and Development Assessment Application

Knowledge	*M*	*T*	*DF*	*Sig.* (2-tailed)
Pre Test	56.7	-21.184	29	0.000
Post Test	78.5			

Note. M – the mean (average); T – the t-test statistic; DF – the degrees of freedom; $Sig.$ – the significance level.

Table 6
Assessment of Application Use by Large Groups

Rating Indicator	Average	Category
Media Aspect		
Use of language in media	4.8	Well
Use of images in media	4.6	Well
Ease of use of media	5.0	Very good
Instructions for use	4.6	Well
Material Aspect		
Material presentation	4.8	Well
Accuracy of terms and use of sentences	4.8	Well
Ease of understanding	4.8	Well
Ease of implementing	5.0	Very good
Interesting	5.0	Very good
Benefits/usage	5.0	Very good
Aspects of Product Use		
Constraints in using the product	4.8	Well
Impact of using the product	5.0	Very good
Average	4.8	Very good

Evaluation Stage
This summative evaluation focuses on the extent to which product use interventions can be used to achieve the desired goals. In this study, the summative evaluation was not carried out because the development research carried out had not yet reached the assessment of potential impacts.

The rating scale uses a Likert scale with a score of 1–5. Based on the results of Table 2, there are 12 indicators of assessment by material experts with a total score of 49 and an average of 4.1 with the conclusion that the application is in the good category. Validation of nutrition experts is needed related to the assessment of toddler growth. Table 3 shows that the average expert validation results are 4.7 in the good category.

Comments given by pediatric nursing experts are: Growth material can be added with material for infants 0-12 months, so that there is a way of measuring body length for babies. Comments from nutritionists: good app and increase user motivation. In the application there is still the use of foreign languages, one of which is a table. The material needs to be added about the impact of children's growth if they are not in line or parallel. Applications accessed via Android may be slightly enlarged or can be replaced with material made in the form of videos. In the growth classification, the source library is listed.

The follow-up to the expert assessment is to revise and add videos and a bibliography or source material to the application. Next, a stage 2 expert assessment is carried out and the results of the assessment show that it is suitable for use without revision.

The assessment of media experts is carried out by computer and programming experts to get input on the feasibility of the applications that have been developed, the results of the assessment obtained an average of 4.7 (good category) and the advice given is to add videos according to the material to facilitate user understanding. Revision of the application is done by adding a video of the material on the menu of the material being applied

and at stage 2 assessment by media experts it is concluded that it is suitable for use without revision.

The results of the paired sample t-test analysis showed that there was a significant difference between knowledge before using the application (M=53.3) and knowledge after using the application (M=78.0 and p<0.05).

The conclusion is that there is a significant difference in knowledge before and after using the application, while the application assessment is carried out using a research subject assessment sheet with an average result of 4.8 (good category).

Discussion
The development of teaching media applications is carried out by following systematic steps: the process of designing and developing using the ADDIE framework (Rusdi, 2018) namely Analysis, Design, Develop, Implementation and Evaluation as the main stages while the process of designing intervention products uses the Dick and Carey (Mohammadi et al., 2015) intervention design model where the guidelines for assessing the growth and development of toddlers are based on Android is used to make the educational process and skill improvement easier and more interesting.

The results of developing a growth and development assessment application with recommendations from media experts and material experts are suitable for use without revision as well as trial results from users with good category scores and interesting application comments making this application applicable in learning in pediatric nursing courses.

Several application developments have been carried out with good results and can be applied, in general the previous developments are with different methods and are more directed at development in assessment and stimulation (Lee et al., 2004). Designing instrument for early stimulation, detection and intervention for growth and development of children based on android system. In this study, the design includes hardware, software and

manuals with evaluation using the focus discussion group (FGD) method. The results show that the content, accuracy, time and speed of application operation are good and it is recommended for the government to use this application.

Other app development Design and build a child growth monitoring system application as a growth detection tool (Julizal et al., 2019). Desktop-based application research using the Java programming language in processing child growth or child growth cards as an application for monitoring problems or deviations in child growth with a community education approach. The results of filling out the development sheets for infants and toddlers can be seen quickly, however, further monitoring and guidance is still needed so that Posyandu cadres and clinical midwives can carry out monitoring activities on child development using application programs independently and continuously.

Prototype of application for growth and development of toddlers for posyandu cadres in rural areas (Wijayanto, 2012). The purpose of this study was to develop a prototype of an Android-based toddler growth and development application that could be easily used by posyandu cadres in rural areas. With the existence of a prototype (prototype) application for growth and development of toddlers based on Android, it is expected that the accuracy of the counseling provided by posyandu cadres can be further increased along with the accuracy of the data recorded by the system.

Applications for early detection of growth and development of children age zero to six years based on Android (Saurina, 2016). The purpose of this research is to make an application for early detection of growth and development of children aged zero to six years based on Android. This application is intended for parents and the health medical team on duty at the Puskesmas to provide information about children's growth and development, find growth irregularities and can provide advice on what early stimulation should be given to children.

The use of multimedia in the teaching and learning process is aimed at improving the quality of teaching and learning, with the development of multimedia technology, the elements of video, sound, text and graphics can be packaged into one application. Basically, the purpose of implementing learning using multimedia is to be able to replace and complement the objectives, materials, methods and assessment tools that exist in the teaching and learning process in conventional learning systems. With the application of this multimedia, it is hoped that it will be able to provide changes in the learning atmosphere, so that it can lead to motivation, especially in participating in learning so that it can improve student learning outcomes. The use of multimedia technology helps in efforts to increase student motivation, explore and improve subject matter in schools. Multimedia technology applications in the form of tutorials, simulations, virtualization and make it easier to get information, transmit and perform routine tasks automatically.

This type of learning has several advantages. The development of multimedia technology has promised great potential in changing the way a person learns, to obtain information, to adapt information and so on. Multimedia also provides opportunities for educators to develop learning techniques so as to produce maximum results. Like wise for students, it is hoped that with multimedia they will find it easier to determine what and how students can absorb information quickly and efficiently. Sources of information are no longer focused on the text of the book alone but are broader than that. The ability of multimedia technology that has been connected to the internet will further increase the ease of obtaining the expected information.

A lot of research on the use of multimedia has been done (Johnson & Mayer, 2009). In this study, the transfer performance and retention performance of students who received information using multimedia were assessed. The results showed that the multimedia representation group had better performance. In retention performance, it was found that students who received multimedia in delivering information remembered more than the group of students who only received one medium.

Multimedia has been widely used by companies to deliver training materials to their employees, as well as by teachers and lecturers to deliver teaching materials to students (Mohammadi et al., 2015). It is believed that the use of multimedia in a learning activity (at school or in training activities) can improve learning outcomes (Sanitasari et al., 2017). Presentation software such as Microsoft Power Point combines various types of media into an attractive presentation package, which will attract attention and increase the motivation of learners (Levasseur & Sawyer, 2006).

The results of research on multiple channels, namely the delivery of information through various types of media indicate that when a channel is complementary to existing information, learning activities will increase, but when information provided through a different channel is excessively repetitive (redundant), then generally learning activities will not increase. When information provided through different channels is inconsistent with previously available information, learning activities will actually decrease (Lindsay, 2011).

Research on multimedia and learning technologies related to multimedia over the years has shown inconsistent findings regarding the effects of multimedia on learning activities (Al-Qeisi et al., 2014). Some studies show a positive effect of multimedia, while others show no effect, and some even show a negative effect. The inconsistency of the results of this research is caused by the many unified factors that influence the role of multimedia in learning activities (Huang et al., 2013).

The debate about the role of multimedia in learning activities is fierce between Kozma and Clark.

Clark (1994) argues that the media has no effect on learning activities. According to him, the media is only a "vehicle" for learning activities, while what affects learning activities is the method used. Clark agrees with the opinion that the new media used in learning activities will affect a learner's learning activities, but once the learner is used to the new media, the influence of the media no longer exists.

Kozma (1994) argues that media can enhance learning activities. Media can help create a better "mental model" so as to help a learner understand. For example, a text-only book requires us to have prior knowledge of what is discussed in the book so that we can create a "mental model". Without prior knowledge about the material discussed, the "mental model" that is made may be inaccurate. When pictures are included in the book, it will be easier for students to create a completer and more precise "mental model". Thus, through media, a learner has the ability to explore places, within his virtual world, that he may never see in person.

Conclusions

The development of an Android-based growth and development assessment guideline provides output in the form of the "GUVI_Tools" application which is an interactive multimedia-based learning media developed with development research steps carried out using the ADDIE framework (Analysis, Design, Development, Implementation and Evaluation) and Implementation the application shows a significant increase in knowledge before and after using the application and the results of the assessment of application use are in good category.

Ethical Approval

This study complies with the ethics committee of the Health Research Ethics Commission of the Ministry of Health, Jambi (LB.03.02./3.5/144/2021 from 01/16/2021).

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SOCIAL AND BEHAVIORAL SCIENCES

Psychology

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ORIGINAL RESEARCH

The Impact of Psychological Transformation Game "My Dao" on Value Orientations of Participants

Authors' Contribution:
A – Study design;
B – Data collection;
C – Statistical analysis;
D – Data interpretation;
E – Manuscript preparation;
F – Literature search;
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Abstract

Background and Aim of Study:	*Psychological transformation games that have great potential for solving a wide range of problems related to clients' mental health are becoming increasingly popular among psychologists and psychotherapists. These techniques should be not only interesting and attractive to clients but also effective as a form of psychological practice.* *The aim of the study: to investigate the impact of the psychological transformation game "My Dao" on value orientations of participants using the diagnostic method of Schwartz.*
Material and Methods:	*The study used the toolkit of the psychological transformation game "My Dao". The effectiveness of the game impact on the participants was determined by means of the diagnostics of value orientations suggested by Schwartz. The treatment group consisted of 134 people, 75 men (55.97%) and 59 women (44.03%) aged 17-35 years. The control group included 126 people, 69 men (54.76%) and 57 women (45.24%) aged 18-30 years. The results of the treatment and control groups were measured using the SPSS Statistics Module. The obtained results prove statistical significance (p<0.05).*
Results:	*The greatest impact of the developed game on the participants is observed at the level of normative ideals: tradition, conformity, security, hedonism and universalism. This indicates their certain change towards increasing harmony and stability, as well as reducing humility and acceptance of their destiny. At the level of individual priorities, there is an increase in hedonism, power and stimulation, which indicates an increase in the role of satisfaction, success, ambition, the desire for novelty and strong emotions. The obtained high results of universalism, hedonism, self-direction and conformity indicate an increase in understanding, tolerance, enjoyment of life, self-control, self-government, self-discipline and politeness of game participants.*
Conclusions:	*The use of the transformation game "My Dao" in psychological practice is an effective psychotherapeutic method that affects the value orientations of participants, changes in self-esteem and motivation, disclosure of their personal resources to solve problems and develop further. This technique is universal due to the age category of participants and the ability to solve psychological problems.*
Keywords:	*psychological transformation game, value orientations, motivation, diagnostics, toolkit, psychological problems*

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Introduction

Socio-cultural and socio-economic changes taking place in society in recent years, firstly, are global, and secondly, the speed of these changes is increasing, which affects the psychophysical state of the population. New pandemics are emerging. Thus, governments of a vast majority of countries respond to the COVID-19 pandemic by introducing social distancing, which affects the psycho-emotional state of population and contributes to deviant behaviour, neurotic disorders, etc. All this increases the demand for psychological care and draws increasing attention of various segments of population to psycho-preventive and psycho-hygienic measures (Melnyk et al., 2020).

Among a wide range of psychological approaches, as well as methods, we will consider one of the most universal, in our opinion, the method of psychological game. Psychological game, in contrast to "entertaining game" or "educational game" that focus mainly on recreation or learning (intellectual development), has an impact on all areas of a person's life: motivational, cognitive, affective, conative, value, and helps to improve the mental health of the individual in general (Melnyk, 2004).

Psychological transformation games have become increasingly popular among psychologists and psychotherapists in recent years, as they, directly and indirectly, address a wide range of issues related to the mental health of their clients. In particular, they develop cognitive activity, emotional intelligence, somatic awareness and archetypal integration, value orientations, which contribute to psychologically significant personal transformations.

Thus, for a psychologist, game as a form of activity is universal and attractive, it simulates the experience of difficult situations and their solutions. Therefore, in modern psychological practice, transformation games are actively used.

The aim of the study. To investigate the impact of the psychological transformation game "My Dao" (Melnyk & Stadnik, 2018b) on value orientations of participants using the diagnostic method of Schwartz.

Materials and Methods

The toolkit of the psychological transformation game "My Dao": 12 figures representing animal symbols; 108 picture cards (reproduction of classical paintings), divided into 3 groups; 36 incentive (motivation) cards with words of wishes; a six-sided dice (each of its six facets marked with a different number of dots from 1 to 6); a game board, divided into 3 sectors (from 1 to 36 points in each) according to the leading activity (play, study, work).

The method of diagnosing the value orientations by Schwartz (adapted by Karandashev (2004) was used to test the effectiveness of the impact of the developed methodology of the psychological transformation game "My Dao" on the study participants. The first part of the questionnaire is designed to study the values, ideals and beliefs that affect the individual. The list of values consists of two parts: nouns and adjectives, which include 57 values. The participant evaluates each of the proposed values on a scale from 7 to 1 points. The second part of the Schwartz questionnaire is designed to study the personality profile. It consists of 40 descriptions of a person, characterizing 10 types of values. A scale of 4 to 1 points is used to evaluate the descriptions.

The treatment group consisted of 134 people, 75 men (55.97%) and 59 women (44.03%) aged 17-35 years. The control group included 126 people, 69 men (54.76%) and 57 women (45.24%) aged 18-30 years.

The methods of mathematical statistics were used – Pearson criterion (χ^2). The means of value orientations of the treatment and control groups were measured using the SPSS Statistics Module. The obtained results prove statistical significance ($p<0.05$).

Results

Let us consider the main provisions of the developed psychological transformation game "My Dao" or "My Way" (hereinafter – "My Dao").

The name of the game is a phrase that characterizes the philosophical concept of the developed methodology. If the first word "My" does not require clarification, the second is a rather complex category. The Chinese concept of "Dao" ("Tao") is complex and ambiguous. This is one of the most important categories of Chinese philosophy. Confucius and the early Confucians gave it moral significance, interpreting it as the "path of man", i.e. moral behaviour and a social order based on morality. The most famous Taoist interpretation of the Dao (Tao) is contained in the "Tao Te Ching*"* treatise: "Dao is eternal and has no name" (Didyk, 2013), where the phenomenon of "Dao" can be understood as a universal principle, rationally inaccessible, and therefore a person should interfere as little as possible with this principle of self-realization by his conscious action and desire. Lao Tzu considered that following the Dao means seeing, experiencing the forces and sailing along with the wave without resisting the flow (Didyk, 2013). This does not mean that a person should rush into the first wave that comes across. First, you need to feel intuitive how this world lives and then surrender to the wave. Living naturally in Taoism means following naturalness, avoiding arbitrary actions caused by attempts to comprehend what exists, instead of feeling what exists (Yachyn et al., 2011).

This term should not be confused with the acronym DAO, which has recently emerged and means a decentralized autonomous organization in which control is distributed and distributed among team members, rather than hierarchically around a single authoritative figure. Although our proposed methodology is focused on the client(s) and not the group leader, we use the term "Dao" as the notion of Taoism, not as a distributed ledger technology.

"My Dao" methodology is a complex intertwining of psychological approaches, theories and techniques, including:

- the psychoanalytic approach to the analysis of the player's personality through the study of psychological ego defence mechanisms and the use of psychoanalytic techniques (Freud et al., 1953/2001);
- the analytical approach to the analysis of complexes and the unconscious through the choice and interpretation of the choice of game pieces by players (Jung, 2014);
- the transactional analysis (structural analysis, transactional analysis, game analysis, scenario analysis) to study the interaction of players in communication, accompanied by the presentation of their positions (Berne, 1964/2016);
- the Gestalt approach to the interpretation and discussion of picture cards and stimulus cards carried out by participants in the game (Perls, 1973);
- the individual approach to the analysis of life goals and lifestyle at different age stages (game zones) of players (Adler, 2013);
- the activity and body-oriented approach to the analysis of behaviour and nonverbal actions of players that they perform during the game (Reich, 1972).

Among the many methodological approaches and theories that we relied on in the development of "My Dao", the theory of "Leading Activity Periodization" should be singled out (Elkonin, 2001). According to this theory, psychologists traditionally distinguish childhood, teenage, and early youth periods.

In the developed methodology, we have divided the game into three stages:
1) childhood, where the leading activity is play;
2) adolescence and youth, where the leading activity is education;
3) the period of adulthood and old age, where the leading activity is a professional activity.

The important starting points and key principles of the "My Dao" methodology are:
- the principle of neutrality;
- the principle of equal position;
- the principle of unity of decision and action.

The principle of neutrality is realized through the inner position of the psychologist. This is due to the fact that the attitude of the game master affects the outcome of the game even if it has not been pronounced verbally. In the game, the shown leading verbal and nonverbal signals of the psychologist can (consciously or unconsciously) be added by the participants to their personally significant self-created story. And this, in turn, further affects certain decisions. The position of neutrality, in this case, implies a non-judgmental approach, impartiality and professional interest of the game master in the client. If a psychologist has personal feelings and thoughts, it is important that he/she defines them as a personal position and as one of the possible points of view.

In addition, the principle of neutrality is manifested in the fact that the game master does not interpret the information that arises during the game. He/she generally works based only on the formal signs of what he/she hears and sees during the game. But he/she can support clients by creating the conditions for the game to continue without delving into the content.

If necessary, the game master uses metaphorical images (words, parables, anecdotes, stories) in the form of therapeutic metaphors. A therapeutic metaphor deals with the unravelling of the hidden content of the client's inner world and generates in his subconscious mind the processes associated with the construction of various internal associations. As a result, conscious and unconscious processes interact, giving rise to new interpretations and new behavioural reactions. This reflects the inner experiences and the ability to reflect on them. Another facet of the principle of neutrality is realized through the game master's concern for the emotional background of the game. In the proposed methodology, it is the unity of word and action, decision and its implementation that is the key to the transformation effect. The optimal background for the game is a positive atmosphere without an emphasis on the emotions of clients. This approach is not superficial, it provides the lightness and dynamism necessary to maintain the focus on the goal. We usually perform more profound work with clients' emotions at an individual session.

The principle of equal position is transmitted through the position of the game master, who does not provide assistance or teach. He/she only creates the conditions for the game. Thus, each of the participants is the only expert in his/her life who is responsible for deciding and achieving his/her own goals. The psychologist is responsible for strict compliance with the rules and the order of the game of participants. In addition, he/she can ask formally logical questions without delving into the semantic aspects.

The principle of unity of decision and action is key to the transformation process. It is realized not only in the semantic story that the client creates during the game but also in a combination of sensorimotor and ideomotor components. We believe that when a participant of the game has no internal contradictions but enough motivation, the successful implementation of the plan is inevitable. This idea is suggested by the psychologist to participants of the game. That is, if a participant has set a goal but cannot achieve it during the game, it does not mean that the task is not solved in principle. But that means he/she is not to blame for his failure.

The developed psychological transformation game "My Dao" simulates the participants' passage through typical stages of human life.

The aim of "My Dao" is to research the self-esteem and motivation of participants, disclosing their personal resources for problem-solving and further development.

The target group of "My Dao": it is designed for clients of a fairly wide age range – from young people (from 17) to the elderly, as well as for clients with a wide range of deep personal problems. It can be used for individuals in non-clinical and clinical psychotherapy.

"My Dao" toolkit:
1) 12 figures representing animal symbols and corresponding to the types of temperament (properties) of the nervous system:

- mammals (elephant, monkey, dog);
- birds (peacock, crow, eagle);
- reptiles (turtle, chameleon, crocodile);
- waterfowl (whale, goldfish, dolphin);
2) 108 picture cards – reproduction classical paintings, turned upside down and arranged in separate groups:
- 36 cards depicting scenes related to the age of childhood, where the leading activity is play;
- 36 cards depicting scenes related to the age of youth, where the leading activity is education;
- 36 cards depicting scenes related to the age period of adulthood, where the leading activity is professional activity (work);
3) 36 incentive (motivation) cards with the words of wishes, which are composed in a pile and turned upside down, except for one card, which is face up and placed next to this group;
4) a six-sided dice (each of its six facets marked with a different number of dots from 1 to 6);
5) a game board, divided into 3 sectors (from 1 to 36 points in each) according to the leading activity (play, study, work); each sector of the game board has stop-marks: "growth", "prize", "penalty".
"My Dao" game description.
Usually, before the start of any transformation game, participants are asked to define the playing focus. This technique is used to record changes in players that occur after the game, the reflection of the participants of the game or it is even an indicator of the effectiveness of the psychologist. We do not use this technique in our proposed methodology, as we believe that it is much more important to study the changes that occur in players during the game than the "classic" result of the game (who has won; what the result is; whether the goal was achieved, etc.).
The game is divided into three stages: preparatory, main and final.
The preparatory stage. The master instructs players selected in advance, informs them about the rules and the goal of the game, draws lots to determine the order of the participants' play. Then playing cards are shuffled, creating a random sequence of these cards. After that, the master asks the players to take turns (according to the results of the draw) to choose one of the 12 animal characters. Analyzing their conscious or random choice, each player answers the question: "Why did I choose this particular animal?", "What do I like/dislike about it?", "What does it look like?". An important condition for this stage is to create an atmosphere of trust and friendliness.
The main stage. Players take turns throwing the dice on a flat surface to get a random number and according to this number make a certain number of moves. After moving a figure on one of the three sectors of the game board, they take a picture card from a certain pile. The ordinal number of this card in the pile must correspond to the number of moves. They then describe the associations that this card evokes in them, and answer the master and participants' questions if any. For example: "What does this image remind you of?", "What do the characters in the picture feel?", "What are

their problems?", "What is their goal", "What associations does the chosen picture evoke?", "Who would you like to talk to?", "Who is this?", "What would you like to ask?", "What did they answer you?". Players keep the picture card until the end of the game, they symbolize their achievements in life.
After the answer, players take a motivation card from the pile of face up incentive cards or choose to take it from the pile of face down cards. They then answer the master's questions, aimed at the player's understanding of the resource/anti-resource of wish words to achieve the goal and solve problems. For example, "Why have you chosen a face up/face down card?", "What does this wish word mean to you?", "What does this wish word motivate you to do?" or "Why do you think you have chosen/you have got this wish?".
Each answer is commented on and discussed if players wish. At this stage, game participants must identify their resource states (meditation, serenity, confidence, inspiration, interest, attentiveness, daydreaming, energy surge, relaxation, anticipation, emotional uplift, feelings of freedom, intellectual uplift, focus, calm, a sense of the path, etc.). that were obtained or strengthened during the game. The master focuses on their causes and consequences, actions and deeds. After discussing this card, the player puts it back to the pile face down, and with it, he/she puts the one that was face up. He/she then opens the top motivational card from this pile, which he/she places next to the pile. This gives the next participant the opportunity to choose a motivational card.
Participants go through all three sectors: first yellow (play), then green (study) and red (work). They make the next moves, describing the associations with the taken picture cards and the taken/selected motivational cards. When a player stops at the "growth" mark, he/she moves forward (doubles the result of the last throw). When a player stops at the "prize" mark, other participants must present him with one of their picture cards that they choose at their discretion. When a player stops at the "penalty" mark, the participant misses the next move. Having reached these points, participants can express their opinion on the justice/injustice of destiny.
The final stage. Participants and the master make conclusions. Participants analyze their life achievements, associating them with the cards accumulated during the game. The master can discuss the following issues: the importance of the place and size of a particular area of life for the participant; the actual amount of energy spent on a particular area of their lives; active and passive spheres, the use of legal or other strategies of professional activity; general characteristics of personal resources; conditions and opportunities to master the professional sphere for self-realization; personal balance of values. Summing up, the master emphasizes that the winner in this game is not the one who came first to the finish line or collected more cards, but the one who was able to rethink the essence and meaning of his/her life.
To test the effectiveness of the psychological transformation game "My Dao" we used the method of

diagnosing the value orientations by Schwartz (adapted by Karandashev (2004) applied to study the dynamics of changes in values in groups and individuals in connection with their life problems. The questionnaire is based on the theory that all values are divided into social (cultural orientations) and personal. The respondent was asked to rate the importance of each value as the dominant principle of his life in points. The higher the score, the more important this value is for him/her.

Here is a brief definition of value orientations according to their central goal according to Schwartz:
- Power – social status, dominance over people and resources;
- Achievement – personal success according to social standards;
- Hedonism – pleasure or sensual gratification for oneself;
- Stimulation – excitement and novelty;
- Self-Direction – independence of thought and action;
- Universalism – understanding, tolerance and protection of the welfare of all people and nature;

- Benevolence – preservation and improvement of the well-being of loved ones;
- Tradition – respect and responsibility for cultural, religious customs and ideas;
- Conformity – restraint of actions and motives that may harm others and do not meet social expectations;
- Security – safety and stability of society, relationships and oneself.

For the study, we selected a group of clients before and after the psychological transformation game "My Dao" – 134 people, including 75 men (55.97%) and 59 women (44.03%) aged 17-35 years (high school students, university students, employees). The control group consisted of 126 people, including 69 men (54.76%) and 57 women (45.24%) aged 18-30 years (mostly university students).

The study of the values by the methods of Schwartz showed the means of value orientations of treatment (before and after the game) and control groups (in points) (Table 1).

Table 1

The Means of Value Orientations of Treatment (Before and After the Game) and Control Groups According to the Method of Schwartz

Levels studied at different stages	Value orientations (in points)									
	Universalism	Power	Hedonism	Self-Direction	Security	Stimulation	Conformity	Tradition	Achievement	Benevolence
Level of normative ideals										
Treatment group before the game (n=134)	6.6	6.1	6.9	6.4	4.4	5.9	6.8	6.2	6.4	7.0
Treatment group after the game (n=134)	5.9	5.7	6.2	6.4	5.8	5.5	6.2	5.3	6.2	6.6
Control group (n=126)	6.4	5.8	5.8	6.6	4.2	5.1	6.8	6.1	6.5	6.8
Level of individual priorities										
Treatment group before the game (n=134)	4.2	3.2	3.7	4.2	4.5	3.7	4.2	4.0	3.9	4.2
Treatment group after the game (n=134)	4.5	3.8	4.5	4.3	4.2	4.1	4.3	3.9	4.0	4.3
Control group (n=126)	4.3	3.4	3.8	4.5	4.0	3.6	3.8	3.6	3.9	3.9

As we can see, the values of benevolence (7.0), hedonism (6.9) and conformity (6.8) are the highest in the treatment group at the level of the normative ideals before the game. These indicators characterize a person for whom loyalty, indulgence, pleasure, enjoyment of life, obedience, self-discipline, politeness, respect for parents and elders are important. After completing the game, these indicators dropped to 6.6 and 6.2 points, respectively. At the same time, the most significant dynamics of some indicators during the game should be noted. There was an increase in safety indicators from 4.4 to 5.8 points (p<0.05), which indicates an increase in the role of harmony and stability. There is also a noticeable decrease in the role of tradition from 6.2 to 5.3 points, universalism from 6.6 to 5.9 points and hedonism from 6.9 to 6.2 points (p<0.05), which indicates the devaluation of humility, acceptance of one's own destiny after participating in the game.

As for the control group, the most significant results are shown in the following values: benevolence (6.8), conformity (6.8) and self-direction (6.6), which corresponds to such qualities as honesty, responsibility, friendship, self-discipline, politeness, self-control and self-government.

At the level of individual priorities in the treatment group, an increase in hedonism (3.7/4.5), power (3.2/3.8) and stimulation (3.7/4.1) during the game is observed, which indicates that for the students the role of satisfaction, success, ambition, desire for novelty and strong emotions increased.

At the same time, high results of universalism (4.5), hedonism (4.5), self-direction (4.3) and conformity (4.3) after the game indicate an increase in understanding, tolerance, enjoyment of life, self-control, self-government, self-discipline and politeness. The level of individual priorities of the control group is also

characterized by high results of self-direction (4.5) and universalism (4.3).

Thus, the greatest impact of the developed psychological transformation game "My Dao" on the client according to the method of diagnosing the value orientations by Schwartz is observed at the level of normative ideals (security, tradition, hedonism and universalism), which indicates a certain change towards the increase in harmony and stability, decrease in humility, acceptance of one's destiny, satisfaction, enjoyment of life, understanding and tolerance. At the level of individual priorities, there is an increase in hedonism, power and stimulation.

Discussion

One of the effective methods in the work of a psychologist is a psychological game. At the same time, in terms of form and content, it is usually clear and interesting to wide circles of people of any level of education. Due to these facts, the psychological game can be a modern, technological and universal tool for psychological assistance.

The game is a universal phenomenon of human existence, inherent in all human communities without exception. The analysis of the phenomenon of game in modern science is based on historically formed approaches in the game theory of previous eras, each of which is characterized by its own views on its essence (Guzik, 2012). Thus, the ancient Greek philosopher Plato (427-347 BC) in his last dialogue (England, 1921) notes that man has to spend his life in the game, playing certain games, to get the support of gods and repel enemies. He even considered its educational and formative functions.

In the Middle Ages, the game was dominantly viewed as a manifestation of immoral and sinful life, which according to Augustine's work "The City of God" destroyed the Romans (Augustine, 2006).

It should be noted that in the 19th century, the teaching of Charles Darwin about the laws of the historical development of living nature had a great impact on the formation of game theory. The ideologist of social Darwinism Spencer believed that game is an artificial exercise of forces, which, in the absence of natural action, become ready for genuine activity (Thomson, 1906). Freud et al. (2001) regarded game as the realization of repressed desires, as the earliest normal forms of activity. Berne (1964/2016), Fink (2016) and Huizinga (1938/2016) made the greatest contribution to the modern scientific understanding and interpretation of the game phenomenon.

Human culture emerges and unfolds in play. Culture arises in the form of play, first it is played out and thus consolidated in the life of society, passed down from generation to generation (Huizinga, 1938/2016).

The game is a set of recurring complementary ulterior transactions characterized by a well-defined psychological manifestation. During a hidden transaction, the participant often pretends, because he/she is doing one thing, but in reality, he/she is doing something else. In general, the game is an infinite and dynamic element of the unconscious plan or scenario of each person's life (Berne, 1964/2016).

Fink (2016) calls the play the fifth existential basic phenomenon of human existence, the last in the hierarchical sense, less significant and substantial than death, love, work and ruling. He considers it to be as eternal as these phenomena. It embraces the entire human life to its foundations, take hold of it and significantly determines the existence of man, as well as the way of understanding human existence. It permeates other basic phenomena of human existence, being inextricably intertwined and bound to them.

At a certain stage of society development, game practices are more and more clearly manifested in non-game contexts, and game logic is purposefully used to solve certain problems, including business, managerial and educational. In modern science, these processes are described by the term "gamification" (Frissen et al., 2015). Nicholson (2015) proposes a model of "meaningful gamification – RECIPE" for transformative long-term impact on client's behaviour based on intrinsic motivation. It contains the following game elements:

1. Play – facilitating the freedom to explore new possibilities and make mistakes, allowing you to overcome the boundaries imposed by structure and rules and experiment with new rules.

2. Exposition – creating stories that are integrated with the real-world setting, as well as the opportunity for participants to create their own stories.

3. Choice – developing systems that put the power in the hands of the participants.

4. Information – using game technologies to allow participants to increase their knowledge about the real-world context.

5. Engagement – encouraging participants to learn from others.

6. Reflection – assisting participants in finding other interests and past experiences that can deepen engagement and learning.

Thus, within the existing system of social relations, the game is one of the mechanisms of transmission of cultural traditions from one generation to another (Nicholson, 2015). Many children's games, in which the child's socialization takes place, are imitations of various actions performed by people in real-life situations. The game can be an imitation of a conflict. Having experienced a conflict in the form of a game, a person is prepared for actions in the event of its actual occurrence. According to modern views, the game is a reflection of reality, a simulation of living in difficult situations. The business game acts as a means and method of preparation and adaptation to work, social contacts in professional situations. The modern form of the work of a psychologist is a transformation game (Faerman, 2020). Game technology is used as a universal and attractive type of activity and cognition, a form and method of teaching.

Game activity performs the following main functions (Cherevko, 2006): entertaining (providing satisfaction, arousing interest, inspiring further activities); communicative (teaching interpersonal communication, assimilation of social and cultural values); self-

realization (this is a testing ground for practical activities); therapeutic (overcoming various difficulties that arise in other activities); diagnostic (detection of deviations from normative behaviour, self-cognition during the game); corrective (making positive changes in the structure of personal qualities); socialization (inclusion in the system of social relations, assimilation of the norms of human coexistence).

It is found out that transformation games have strong motivational potential (Heckhausen, 1977). The effectiveness of the transformation game is ensured by the "Zeigarnik effect" (the effect of incomplete action and the effect of waiting), which can cause a feeling of approaching success in achieving the goal. In addition, due to the conditions of the game, the resistance of the participants is weakened, and the intrinsic motivation is activated due to the effects of the field (Lewin, n.d.).

The advantage of transformation games is that they capture attention, increase group excitement, along with the so-called game responsibility, increase reactivity in the game situation (Myers, 2009).

Thus, the study of the scientific literature allowed us to conclude that game as a form of activity has advantages for the work of a psychologist because it:
- helps to establish contact with the client;
- helps to remove barriers in communication;
- works directly with the subconscious;
- allows a person to understand, feel and verbalize current, exciting issues;
- searches for unexpected solutions, views and discoveries;
- develops new options for overcoming problems.

For the client, the psychological game is important because it is:
- a teaching method that allows a person to better understand themselves and their values, to understand their problems;
- assistance in achieving an important life or professional goal;
- a way to strengthen relationships with others (relatives, friends, colleagues, etc.);
- the ability to understand interpersonal and intrapersonal conflicts;
- a way of training psychophysiological and psychosomatic activities, developing new skills;
- a way of contact with the subconscious and understanding the causes of life obstacles;
- the possibility of relaxation, pleasant pastime and alternative recreation in a game format.

In modern psychology, there are several theories of periodization of human mental development in ontogenesis (Elkonin, 2001; Freud et al., 2001; Kohlberg, 1969; Piaget, 1959). Despite the fact that none of these authors considers human ontogeny over 20-year period, each of these theories is valuable and reflected in the theoretical foundations of our methodology.

Let us consider one of the most spread theories – "Leading activity periodization" (Elkonin, 2001). Without delving into the specifics of the activity approach, we have to note that the works of this scholar became one of the most valuable for the development of the theoretical basis of the psychological transformation game "My Dao". Elkonin (1989) was one of the first to draw attention to the interaction of ideal and real forms: primary forms of affective-semantic formations of human consciousness exist objectively outside each individual, exist in human society in the form of works of art, i.e. these forms existed earlier than individual or subjective affective-semantic formations.

In the process of life, a person develops "psychological neoplasms", goes through certain stages (age crises), characterized by psychological changes, the sensitivity of the individual to external influences and a decrease in resistance to them (Elkonin, 1989). At each stage, certain personal values become more important. Values are a subjectively interested attitude towards things, phenomena, therefore their development presupposes an interested attitude towards educational and professional activities. They affect life orientation, professional and family orientation, professional growth and other motives that shape personality (Melnyk, 2017; Melnyk & Stadnik, 2018a).

Thus, for a psychologist, the transformation game is attractive because it helps to establish contact, works directly with the subconscious, allows a person to realize, feel and verbalize current, exciting problems and develops their new solutions. At the same time, the psychological game is important for clients because it allows them to understand better their values and problems, helps achieve important life or professional goals, strengthens relationships with others, it is a method of relaxation, fun and alternative recreation.

Conclusions

The developed psychological transformation game "My Dao" is aimed at changing the self-esteem and motivation of participants, the disclosure of their personal resources to solve problems and to develop further. This technique is universal due to the age category of participants and the ability to solve psychological problems.

The greatest impact of the developed game on the participants is observed at the level of normative ideals: tradition, conformity, security, hedonism and universalism. This indicates their certain change towards increasing harmony and stability, as well as reducing humility and acceptance of their destiny. At the level of individual priorities, there is an increase in hedonism, power and stimulation, which indicates an increase in the role of satisfaction, success, ambition, the desire for novelty and strong emotions. At the same time, high results of universalism, hedonism, self-direction and conformity indicate an increase in understanding, tolerance, enjoyment of life, self-control, self-government, self-discipline and politeness of game participants. While the level of individual priorities of the control group is characterized mainly by relatively high results of self-direction and universalism. The study of the psychological transformation game "My Dao" with the elderly participants and participants with various psychological problems as well as its testing in clinical psychotherapy are promising.

Ethical Approval

The study protocol was consistent with the ethical guidelines of the 1975 Declaration of Helsinki as reflected in a prior approval by the Institution's Human Research Committee.

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SOCIAL AND BEHAVIORAL SCIENCES

Health Care Sciences

SOCIAL AND BEHAVIORAL SCIENCES. Health Care Sciences

ORIGINAL RESEARCH

The Population-Based Study of Oncology Surgery Department Service During COVID-19 Pandemic in Indonesia Single Center Hospital

Authors' Contribution:
A – Study design;
B – Data collection;
C – Statistical analysis;
D – Data interpretation;
E – Manuscript preparation;
F – Literature search;
G – Funds collection

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Abstract

Background and Aim of Study:
The COVID-19 pandemic has posed an unprecedented threat to global healthcare delivery. Moewardi Hospital was appointed by the government of Indonesia to be a COVID-19 one of regional hospital by June 2020. Other than COVID-19 cases, the hospital also provides care for other diseases which also provides care for oncology patients.
The aim of the study: to assess the impact of the social restriction on oncology services in this hospital.

Material and Methods:
This study compares the number of patients undergoing oncology surgery in the Central Surgery Unit and the number of patients attending the Outpatient Surgical Oncology Unit in March to July 2020 with the number of patients in the same timeframe in the previous year (2019).

Results:
The number of oncology operations in the Central Surgery Unit of Moewardi Hospital declined substantially during the 5-month pandemic period compared to the same period in the previous year, 2019 (p<0.001). There was also a significant drop in the number of patients attending the outpatient surgical oncology clinic during the pandemic period compared to the previous year (p<0.001) The lowest number of oncology surgeries occurred in April 2020, which was 20 patients. The lowest number of patients visited was 170 outpatients in March 2020. Thyroid and skin cancer cases were the most notable decline in surgical oncology cases in the Central Surgery Unit. The largest number of outpatients in the outpatient surgical oncology clinic during the COVID-19 pandemic was mammae and thyroid cancer.

Conclusions:
There was a decline in surgical oncology activities, which culminated in a significant decrease in surgical oncology patients in the Central Surgery Unit and the patient visit to the Moewardi Hospital outpatient oncology clinic during the COVID-19 pandemic.

Keywords:
oncology, surgery, oncology patients, COVID-19, Moewardi Hospital

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Introduction

On December 31st, 2019, Wuhan Municipal Health Commission, China, reported a cluster of cases of pneumonia of unknown origin in Wuhan, Hubei province (Taylor & Johnson, 2020). The case was later identified as the novel strain of coronavirus. On January 5th, 2020, World Health Organization (WHO) published the first disease outbreak on the new virus. Coronaviruses are a large family of viruses that cause illnesses ranging from the common cold to more severe disease. The new virus was then named the "COVID-19 virus". It may enter the host through the respiratory tract or mucosal surface (such as conjunctiva). Symptoms usually begin with nonspecific syndromes, including fever, dry cough, and fatigue. Multiple systems may be involved including respiratory, gastrointestinal, musculoskeletal, and neurologic (Sharma et al., 2021; Wu et al., 2020).

It was not until early March 2020 did WHO announce the COVID-19 as a pandemic, the same month the COVID-19 first case was announced in Indonesia by the President of Indonesia (Setiawaty et al., 2020). The cases were then increased with the first local transmission occurred to a man 59 years old on March 11th, 2020. The virus mainly spread through direct means (droplet and human-to-human transmission). It can infect other people via respiratory droplets when a patient coughs, sneezes, or even talks within six feet area. In response to the case increase, the large-scale social restriction was then being applied to essential activities only. Visits to healthcare facilities and hospital admission were limited to urgent and emergency cases (Lotfi et al., 2020).

The COVID-19 pandemic has posed an unprecedented threat to global healthcare delivery. To deal with infected patients, hospitals that have a high volume of patients requiring critical care have redeployed staff and converted operating rooms into intensive care units (Usman et al., 2021). Also, clinicians must balance standard cancer therapies with measures designed to limit the spread of COVID-19. At the same time, health care workers face many challenges, including shortage of resources (e.g., personal protective equipment), excessive working hours, and psychological distress (Richards et al., 2020; Rocco et al., 2021). Patients in the current pandemic may prefer to postpone non-essential elective surgery due to the risk of contracting the disease while in the hospital. However, this fear may cause patients to delay seeking care for conditions that would otherwise be correctable or curable if presented earlier; loss of function and reduced life expectancy may be the result of delayed presentation and an untimely diagnosis (Soreide et al., 2020; Uimonen et al., 2021).

Moewardi Hospital is one of the hospitals that was appointed by the government to be a COVID-19 one of regional hospital by June 2020. Other than COVID-19 cases, the hospital also provides care for other diseases which also provides care for oncology patients. Several studies have reported the subsequent impact of hospital visits and admission because of the measurement during pandemics (lockdown, social distancing, and restriction) (Lotfi et al., 2020; Reichardt et al., 2020; Setiawaty et al., 2020).To assess the impact of the social restriction on oncology services in this hospital (both surgery and outpatient departments), we compared the number of oncology surgeries and outpatient visits to the oncology department in our hospital during 2 periods, the first 5 months early lockdown period and the same periods in the previous year (2019).

The aim of the study. To assess the impact of the social restriction on oncology services in this hospital.

Materials and Methods

We conducted a comparison study on the oncology service between two periods: during the first 5 months of the early COVID-19 pandemic and on the same period in the previous year. We examined the number of oncology surgeries and outpatient visits from March to July 2020 and compared it with the same month in the year 2019. The number of surgeries and outpatient visits was then analyzed separately. Data were obtained from the medical records of the oncology surgeries and outpatient visits.

The mean surgeries and visits per month were then calculated for each case to find out the proportion of surgeries and visits during the early pandemic period and the same timeframe in the previous year. The mean difference was analyzed by comparing the mean of the total case between two periods. All statistical data were analyzed using the independent sample t-test, performed using the Statistical Package for the Social Sciences (SPSS) for Windows version 25.0. The results of the difference between the number of oncology surgeries and the number of outpatient visits between the two periods were considered statistically significant if $p < 0.05$.

Results

Table 1 shows the results for the total number of surgical oncology patients in both periods (2020 and 2019).
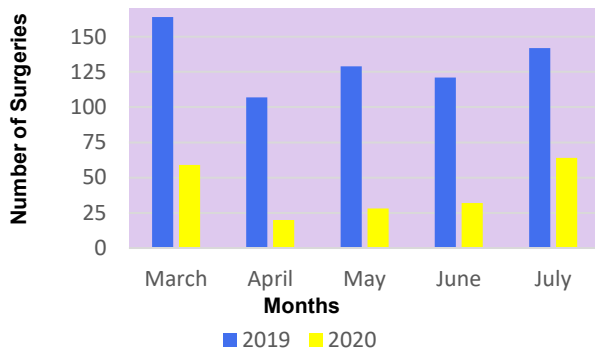
Table 1
The Number of Oncology Surgeries

Month	Year	Surgery number	P value
March	2019	164	<0.001
	2020	59	
April	2019	107	<0.001
	2020	20	
May	2019	129	<0.001
	2020	28	
June	2019	121	<0.001
	2020	32	
July	2019	142	<0.001
	2020	64	

There was a significant decrease in the surgical oncology patients during the COVID-19 pandemic compared to the previous year. The number was notably low in the month after the first COVID-19 case was announced in Indonesia (April 2020), which was only a total of 20 patients of oncology surgeries compared to 107 patients in the same month the year before. The trend continued for few months and the number started to rise in June 2020 (Figure 1).

Figure 1

*The Difference of Oncology Surgeries Between Two Periods*

The same trends show on the outpatient visits to Oncology Unit (Table 2).

Table 2

The Number of Outpatient Visits

Month	Year	Outpatient visits	P value
March	2019	589	<0.001
	2020	170	
April	2019	466	<0.001
	2020	181	
May	2019	574	<0.001
	2020	238	
June	2019	592	<0.001
	2020	293	
July	2019	557	<0.001
	2020	290	

There was a significant decrease in the early pandemic period (March 2020) which was only 170 visits to the outpatient oncology unit, compared to the year before which was 589 visits. The number of the visits gradually rose and peaked in June 2020, and slightly decreased in July 2020, as seen in Figure 2.

Figure 2

The Difference of Oncology Outpatient Visits Between Two Periods
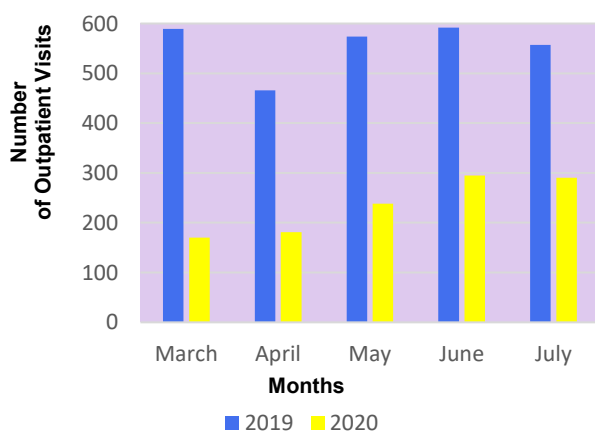
There was a significant decline in the surgery numbers on 5 months pandemic period compared to the same timeframe in 2019 (p<0.001), as seen in Table 1. Similar findings were shown in outpatient visits, which was showing a significant decline each month when compared between two periods.

Discussion

The first two confirmed cases of COVID-19 in Indonesia was announced by the President of Indonesia on March 2nd 2020 (Lotfi et al., 2020). The cases then continued to rise as the government conduct the testing and tracing, and in response to the growing number, the Indonesian National Board for Disaster Management declared an emergency period for 91 days, effective until May 29th, 2020. On March 31st, 2020, President Joko Widodo declared a public health emergency and invoked the police to enforce a large-scale social restriction policy as stipulated by Law No.6/2018 on health quarantines (Wiratraman, 2020). Because of this measure, people are encouraged to stay at home and avoid all unnecessary activities including visits to the healthcare (GP practice, primary healthcare, and hospital) for non-emergency cases. In Moewardi Hospital, which is 1 of 3 COVID regional hospitals. The bed capacity for COVID-19 patients has increase from 7 beds in March to 57 beds in July 2020.

Lack of effective mitigation strategies against COVID and implementation lockdowns to control the spread of infection aggravated the healthcare crisis. COVID has a major adverse impact on cancer care delivery globally. Therefore, a hospital policy is not to accept new patients except for emergency patients or those with life-threatening conditions. The hospital also has a policy on cancer patient care, in this case, the surgery schedule (Usman et al., 2021). Our findings show that during the early pandemic period, especially the first two months after the first two cases were announced and the large-scale social restriction was implemented, there was a significant drop in the number of patient visits to oncology care in Moewardi Hospital (p<0.001). The number of oncology surgery was the lowest in April 2020, after the hospital was appointed by the government as COVID-19 referral hospital (by the end of March 2020). These findings are in line with the study by Reichardt, et al (2020) which reported there was a highly significant reduction in overall cancer admission in 75 Helios hospitals in Germany for the early lockdown period from March 13th to April 28th, 2020 compared to the same period in 2019 (Reichardt et al., 2020). A study by Mulholland et al. (2020) also had similar findings; there were sharp drops in both emergency and planned hospital admission. A similar result was also found by Stohr et al. (2020) who reported that there was a reduction in hospital admission following the government-imposed social restriction, even for emergency cases. Tzeng et al. (2020), reported that the high number of COVID-19 cases without symptoms was an obstacle for reduction in hospital admission for cancer sufferers.

The significant decline in oncology surgeries patient's visits might be due to the following reasons:

1) On the early pandemic year, people were encouraged to restrict their visits to healthcare facilities. Despite the unchanged oncology services in surgery and outpatient departments, people delayed their surgery and outpatient visit unless it's emergency cases;

2) Furthermore, people might have been reluctant to visit the hospital because they were afraid of contagion at the hospital;

3) There was also adjustment in the hospital, such as social distancing rules and COVID-19 screening before surgeries, which subsequently affect patients who wanted to undergo their surgeries or visit the outpatient department;

4) The patients also began to seek alternatives in medical assistance such as utilizing telemedicine or private home care (Kumar & Dey, 2020).

The risk of delay in carrying out health control and treatment of cancer patients is estimated to be an increase in the number of unresectable cancers as well as poor survival outcomes due to cancellations of follow-ups and postponements of surgeries (Stoss et al., 2021).

The remarkable frequency of delays and disruptions in health care, most of which were unintentionally related to the reduction of the COVID-19 burden, posed a significant risk to cancer care worldwide (Riera et al., 2021). Establishing strict protocols and administrative measures can help keep the COVID positivity rate low between patients and healthcare workers and provide uninterrupted oncology services. Keeping in mind the COVID pandemic and taking all necessary actions and experience from the ongoing oncology services, it is the best plan to serve patients in the best possible way (Sultania et al., 2020). In an analysis of patients with cancer that short delay (3 months) had a significant impact on patient survival in patients with aggressive cancer. Delay will also cause the tumor to become more advanced, which means that not only is survival lower, but the cancer will be more expensive to treat in terms of both surgery and/or chemotherapy (Department of Health and Health Service Executive, 2020; Sud et al., 2020). Based on our findings, the surgery numbers and outpatient visits gradually rose in July 2020, as the large-scale social restriction was slightly released. The "new normal" term and health protocol for COVID-19 were applied as declared in the Health Minister decree of Republic Indonesia on June 2020. The hospital's service protocol for COVID-19 and non-COVID-19 patients were also getting clearer, so patients who might have delayed their medical attention started to get back to the hospital to make their outpatient visits or undergo some treatments.

There are limitations in this study. First, this study was only carried out in one hospital and might not reflect the condition in other healthcare facilities. Second, we did not include and compare the emergency visits and surgeries of life-threatening cases, so future studies may focus on the aspect.

Conclusions

There was a decline in surgical oncology activities, which culminated in a significant decrease in surgical oncology patients in the Central Surgery Unit and the patient visit to the Moewardi Hospital outpatient oncology clinic during the COVID-19 pandemic. Strict protocols and administrative measures are needed in oncology services given the conditions in the COVID-19

pandemic. Hospital service protocols for COVID-19 and non-COVID-19 patients must be strictly defined, so that patients can receive medical care services according to their complaints. This is to prevent delays in diagnosis and treatment delays that increase patient mortality.

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SOCIAL AND BEHAVIORAL SCIENCES

Rehabilitation

SOCIAL AND BEHAVIORAL SCIENCES. Rehabilitation

ORIGINAL RESEARCH

"Looking for Fun or Escaping the Fear?" How Can COVID-19 Cyberchondriacs Enjoy the Online Shopping During the Pandemic

Author's Contribution:
A – Study design;
B – Data collection;
C – Statistical analysis;
D – Data interpretation;
E – Manuscript preparation;
F – Literature search;
G – Funds collection

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Abstract

Background and Aim of Study:
As the pandemic escalated into a global health crisis with abundant reports, updates and personal stories invading the World Wide Web and the social media, the context of COVID-19 offered for researchers an opportunity exploring the cyberchondria concept. Surprisingly, despite its prominence, the consequences of this shift in health behavior are still not fully appreciated. For many cyberchondriacs, the online shopping experience is considered as a coping strategy.
The aim of the study: to investigate how excessive health-related anxiety leads to online shopping enjoyment, and to examine the mediating roles of COVID-19 fear and hedonic shopping motivation.

Material and Methods:
A survey methodology is used to collect responses from a sample of 355 consumers in Tunisia and analyzed via AMOS 23. Structural equation modeling was used to assess the causal relationship between measured variables.

Results:
Our results indicate that during the current pandemic, the cyberchondria was associated with an increased online shopping enjoyment guided both by a developed fear from this virus and some of the hedonic motivations.

Conclusions:
This study is one of the first studies that investigate the impact of cyberchondria on shopping experiences. Our findings may indicate starting points for some public health marketers and managers to make interventions to reduce cyberchondria during the pandemic. Particularly, online shopping may be considered as a safe space, where anxious people may escape. However, public health organizations should carefully consider these outcomes of cyberchondria and should elucidate clear pathways of action so that consumers feel empowered to tackle the pandemic effectively.

Keywords:
cyberchondria, COVID-19 pandemic, health anxiety, consumer well-being, fear, hedonic shopping motivations, online shopping enjoyment

Introduction

The outbreak of coronavirus disease 2019 has been considered as a major public health crisis, which has infected more than 10 million people worldwide (Wang et al., 2020). Considering its drawbacks, many researchers start scientific debates universally (Laato et al., 2020; Wang et al., 2020). Since it could influence human mental well-being and lead to fears, worries, and anxiety among individuals, psychological and behavioral drawbacks are considered as key research focus (Jungmann & Witthoft, 2020; Wang et al., 2020). In this context, previous studies on pandemics have demonstrated that anxiety, health worries, and safety behavior are widespread in these times and have reported that up to over 50% of respondents show worries or anxiety during virus-induced pandemics (Garfin et al., 2020; Jungmann & Witthoft, 2020). Embedding our study in the field of mental health, we heed the call for research into solutions to promote mental wellbeing. In this field, so much work can be done and public health specialists can propose an effective way out to challenge societal problems, particularly those related to mental health problems (Jungmann & Witthoft, 2020; Huang & Zhao, 2020; Xiao et al., 2020). However, there is still a limited exploration of the impact of COVID-19 on consumers' mental well-being and consumers' behavior (Jungmann & Witthoft, 2020; Zhang & Ma, 2020).

Several studies have revealed an association between infectious diseases such as COVID-19 and anxiety disorders (Bajcar & Babiak, 2021; E. Lee & Lee, 2019; Hashemi et al., 2020). In this paper, we are focusing on one specific side of health anxiety called "cyberchondria". This latter is consistent with cognitive behavioral models of health anxiety which consider repetitively checking sources of medical information as a form of reassurance seeking (Doherty-Torstrick et al., 2016; Loos, 2013). It refers to searching the web excessively for health care information and escalation of anxiety regarding the state of one's health (Doherty-Torstrick et al., 2016; McManus et al., 2014; Mohammed et al., 2019).

In fact, many individuals are going online to search for useful information that may help them to reduce stress, anxiety and bad feeling about what would happen in the future. Past researchers suggest the term "Dr. Google" to describe how patients make Google searches for some self-help and self-management (Lee et al., 2014). Web search engines can intensify requests about content on serious, life-threatening, or rare diseases (Mohammed et al., 2019; White & Horvitz, 2009). Cyberchondria is evolving not only among clinically diagnosed people, but also among those who have no medical training. Even if this phenomenon is not new, the context of COVID-19 offered researchers worldwide an opportunity for exploring this concept, as the pandemic escalated into a global health crisis with abundant reports and personal stories invading the World Wide Web and the social media (Laato et al., 2020). In fact, since 2019, several researchers proved that cyberchondria can be damaging and harmful for individuals and their well-being (Laato et al., 2020). Particularly, it was generally related to distress and health anxiety (Doherty-Torstrick et al., 2016; Mohammed et al., 2019; Starcevic & Berle, 2013). In addition, people are seeking health-related data in order to reclaim a sense of safety and control. Thus, a health online search may constitute a coping strategy for health anxious individuals (Jungmann & Witthoft, 2020). In recent years, many researchers were interested in the role of coping processes and emotional regulation in health anxiety (Gioia & Boursier, 2020).

Surprisingly, despite its spread and its prominence, the consequences of this shift in health behavior are still not fully appreciated (Jungmann & Witthoft, 2020; Laato et al., 2020; Mohammed et al., 2019). Research into "cyberchondria" is in its infancy (McManus et al., 2014). Particularly, there has been little research on the effects associated with health anxiety and cyberchondria in the context of consumer behavior (Wang et al., 2020). The investigation of possible effects can help to better understand the consumers' reactions to the increasing health anxiety and to develop possible transdisciplinary measures. In this current research, we are trying to investigate the effect of cyberchondria on online shopping, which is considered as a coping strategy. In fact, during this pandemic, the online shopping experience is considered as inevitable solution to social distancing and an evolving risk of contamination. In other words, avoidance-motivated people seek such experiences not for the presence of positive stimuli, but rather for the relative absence of negative stimuli. Physical shopping is becoming too risky and the online context provides a safer shopping environment, particularly for those who showed health-related anxiety.

It was demonstrated that being involved in a public health emergency, like the COVID-19 pandemic, can spark consumers' preferences for utilitarian products, for making unusual protection purchases and for hoarding and stockpiling (Latoo et al., 2020; Wang et al., 2020). However, even if hedonic purchases are often viewed as the tools to regulate consumers' emotions (e.g. stress, negative mood) (Wang et al., 2020), no prior research investigated the effect of such health anxiety on the enjoyable side of shopping as coping strategy.

The aim of the study. To investigate how excessive health-related anxiety leads to online shopping enjoyment, and to examine the mediating roles of COVID-19 fear and hedonic shopping motivation.

Five main hypotheses will be tested in the following parts (Figure 1):

H1: Cyberchondria is positively related to hedonic shopping motivations.

H2: Cyberchondria affect positively the online shopping enjoyment.

H3: The hedonic shopping motivations affect positively the online shopping enjoyment.

H4: Cyberchondria increases the level of COVID-19 fear.

H5: The higher level of COVID-19 fear, the more likely consumers will enjoy the online shopping experience.

Figure 1
Conceptual Model of Cyberchondria

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<table>
<tr><td colspan="3">

| Hedonic motivations |
| Cyberchondria |
| Online shopping enjoyment |
| Fear of COVID-19 |

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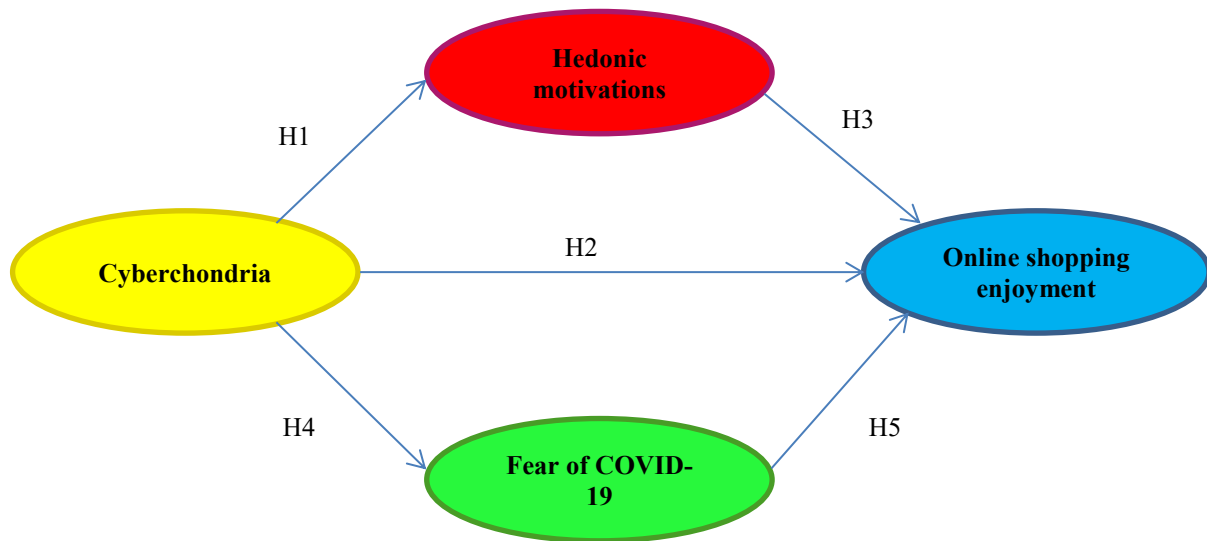
Materials and Methods

In 2020, in Tunisia, the COVID-19 pandemic appeared as a central health concern with extended media coverage about it. Increased health anxiety is evolving among Tunisian consumers. The study's primary objective was to test the conceptual model (see Figure 1) that captures relationships between cyberchondria, fear of COVID-19 and hedonic shopping motivations. We created a survey online, starting with a brief overview introducing the purpose of the study and reminding the confidentiality of all responses. For this study, we used convenience sampling to target anxious consumers due to the difficulty of using probability sampling. To recruit respondents, we joined some non-governmental Facebook groups created to fight against COVID-19 in which the community members showed their anxiety toward the health situation.

We collected data at the beginning of the year 2021. To be eligible for participation, individuals had to be living in Tunisia and 18 years of age or older.

The scales we used were first translated from English to French and Arabic, then back-translated into English by a third party. The back-translated English version was then compared with the original version for modification and to improve the accuracy of the translation. To test the comprehensibility of the measures, a pretest with 20 consumers was conducted. We finalized the questionnaire based on the results of the pretest. Table 1 shows the specific details of the final sample. Participants included 355 individuals. The sample was predominantly female (58.6%) and the average age in this sample was between 36 and 45.

All measurement scales were adopted from established literature, with question items being adjusted to fit the context of the study. Individuals were asked to read some statements and indicate the degree to which each statement typically applies to them on a five-point Likert-type scale ranging from "strongly disagree" to "strongly agree".

Table 1
Characteristics of the Final Sample

Characteristics	Participants	
	number (n)	percentage (%)
Gender		
Male	147	41.4
Female	208	58.6
Total	355	100.0
Age		
From 18 to 25	83	23.4
From 26 to 35	85	23.9
From 36 to 45	99	27.9
From 46 to 60	50	14.1
Over 61 years	38	10.7
Total	355	100.0

McElroy et al. (2019) developed a multidimensional measure of cyberchondria called the Cyberchondria Severity Scale (CSS). This scale consists of 33 items corresponding to five dimensions: (1) excessiveness (repeated nature of online searches), (2) compulsion (web searches interrupting other aspects of on/offline activities), (3) distress (negative emotional response), (4) reassurance (seek out professional medical advice), and (5) mistrust (conflict arising when medical professional and online self-diagnosis do not align). The scale has been translated and validated in several languages and many studies have validated its structure. In addition, using confirmatory bifactor modeling, Norr et al. (2015) have demonstrated that the scale measures a general factor, as well as lower-order dimensions. Some replications built on previous suggestions to reduce the length of the scale and to eliminate the last dimension (Barke et al., 2016; McElroy et al., 2019). For the current study, we adopted the short version proposed by Barke et al. (2016) consists of 15 items (3 items for each dimension). However, we followed some of the previous suggestions by eliminating the last trust

dimension (McElroy et al., 2019; Norr et al, 2015). The final list contains 12 items only.

The present study uses the new scale of the Fear of COVID-19 (FC-19S) developed recently by Ahorsu et al. (2020). This scale has a stable unidimensional structure with good psychometric properties. Initial results indicated that the FCV-19S had good properties from different types of testing (i.e., Rasch analysis). The internal consistency was good as well (α=0.82; composite reliability=0.88).

We measured six hedonic shopping motivations: gratification seeking (GRA), idea shopping (IDE), adventure seeking (ADV), social shopping (SOC), role play (ROL), and value shopping (VAL), based on Arnold and Reynolds (2003; 2012). This measurement was validated in several contexts (Ali et al., 2020; Horváth & Adıgüzel, 2018). It contains 18 items; three to each dimension.

The online shopping enjoyment was measured by a scale developed by Babin et al. (1994). This unidimensional scale was used in several contexts and had demonstrated its validity and its good reliability (α=0.872).

We conducted confirmatory factor analysis (CFAs) and a structural equation model (SEM) was examined. In this model, cyberchondria factors were considered as predictors of six hedonic motivations, the fear of COVID-19 and the online shopping enjoyment. The CFAs and SEM were conducted in AMOS 23 with Maximum of Likelihood (ML) as an estimation method. We verified first the conditions of the applicability of those methods by verifying the outliers, the multinormality and the multicollinearity. Bootstrapping was envisaged as a procedure for dealing with non-normal data (Byrne, 2001), generated confidence intervals that were used instead of t-values to evaluate the significance of path estimates because the data did not exhibit multivariate normality. Model fit was then assessed using the χ^2 statistic, for which a non-significant value indicates good model fit. In addition, other fit indices were interpreted to provide an approximate estimate of the model fit. Specifically, we checked the comparative fit index (CFI), the Tucker-Lewis Index (TLI), and the root mean square error of approximation (RMSEA).

Results

First, our results indicate that more than 70% of the sample reported experiencing high or moderate levels of cyberchondria. Mean item analysis showed that going online to search for symptoms often disrupts their time spent not only on leisure activities but also on their work. Participants showed difficulty in controlling their ruminations regarding symptoms that they have researched online.

The data indicated that the measurement model exhibited an acceptable fit (χ^2=2857.269; df=699; p=0.000; CFI=0.863; NFI=0.828; TLI=0.840; RMSEA=0.093). Tests of convergent validity were acceptable as the composite reliability and the average variance extracted (AVE) both exceeded the recommended minimum cutoff of 0.7 and 0.5,

respectively, for each construct (Table 2). Finally tests of discriminant validity were also acceptable as the squared correlation between every two constructs in the model was less than the AVE of these two constructs (Fornell & Larcker, 1981).

Table 2
Reliability and Convergent Validity Test

Variable	Composite reliability	Convergent validity (AVE)
Excessiveness	0.87	0.761
Compulsiveness	0.93	0.866
Distress	0.89	0.804
Reassurance	0.91	0.821
Adventure	0.84	0.717
Gratitude	0.84	0.751
Role	0.90	0.766
Value	0.92	0.813
Social	0.93	0.878
Idea	0.88	0.831
Fear	0.94	0.689
Shopping enjoyment	0.95	0.816

We also tested whether CMB was a potential problem following a procedure suggested by Podsakoff et al. (2003). A latent construct capturing the common method variance was added to the measurement model and allowed to load on all of the indicators. Results indicate that CMB is not a potential threat to the validity of the findings.

We used AMOS 23 to test our research hypotheses. We tested four alternative models to assess the superiority of our model as we followed prior procedures in well-established works (Bajaj et al., 2016; Diallo & Seck, 2018): the hypothesized structural model, a direct model, and two full mediation models. The hypothesized structural model (Model 1) fit the data well overall (χ^2=2929.480; df=706; p=0.000; NFI=0.824; IFI=0.860; TLI=0.836; and CFI=0.859; RMSEA=0.094).

For the direct effect of cyberchondria on online shopping enjoyment (Model 2), results show that three of the four cyberchondria dimensions were positively affecting online shopping enjoyment. The health-related anxiety that cyberchondriac express influence positively their online shopping experiences. This could reinforce the hypothesis supposing that during this pandemic, online shopping is considered as one of the main solutions for anxious people. Results of testing the second hypothesis (H2a-d) are presented in Model 2 (Figure 2).

For mediating effect of hedonic shopping motivations (Model 3), we followed current trends in mediation analysis (Preacher et al., 2007; Zhao et al., 2010) and examined the direct and indirect effects of cyberchondria through conditional process analysis. More precisely, in a third model, we tested a full
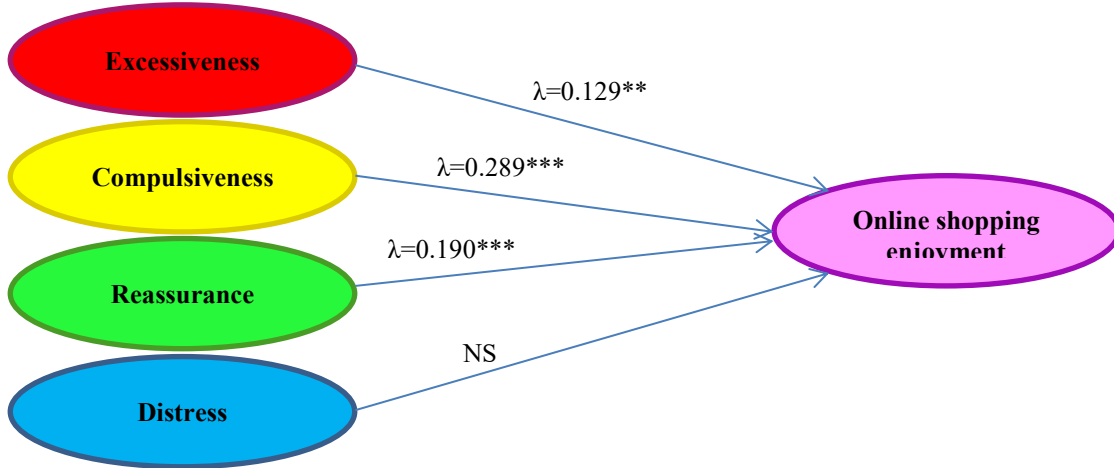
mediation model (no direct effect on online shopping enjoyment and everything is mediated by hedonic shopping motivations). These analyses also established the effect of cyberchondria on hedonic shopping motivations (Table 3).

Figure 2

Testing the Direct Effect of Cyberchondria on Online Shopping Enjoyment (Model 2)

Note. ***sig=0.000; **sig<0.010.

Table 3

Testing the Mediating Effect of Hedonic Shopping Motivations (Model 3)

The tested hypothesis			Hypothesis	Estimate	Standardized RW	P
ADV	<---	EXC	H1aa-H1af	0.057	0.074	0.286
GRA	<---	EXC		0.446	0.415	***
ROL	<---	EXC		0.008	0.008	0.905
VAL	<---	EXC		-0.058	-0.069	0.271
SOC	<---	EXC		0.075	0.066	0.282
IDE	<---	EXC		0.081	0.081	0.202
ADV	<---	COM	H1ba-H1bf	-0.089	-0.137	0.032
GRA	<---	COM		0.098	0.110	0.037
ROL	<---	COM		0.060	0.072	0.252
VAL	<---	COM		-0.267	-0.384	***
SOC	<---	COM		-0.452	-0.472	***
IDE	<---	COM		-0.036	-0.044	0.455
ADV	<---	DIS	H1ca-H1cf	0.122	0.171	0.014
GRA	<---	DIS		0.247	0.251	***
ROL	<---	DIS		-0.007	-0.008	0.912
VAL	<---	DIS		0.126	0.165	0.010
SOC	<---	DIS		0.356	0.338	***
IDE	<---	DIS		0.334	0.365	***
ADV	<---	REA	H1da-H1df	0.048	0.074	0.231
GRA	<---	REA		-0.163	-0.182	***
ROL	<---	REA		-0.190	-0.226	***
VAL	<---	REA		0.175	0.253	***
SOC	<---	REA		-0.008	-0.008	0.882
IDE	<---	REA		-0.097	-0.117	0.039
SHOPENJ	<---	ADV	H5a-d	0.237	0.164	0.010
SHOPENJ	<---	GRA		0.361	0.344	***
SHOPENJ	<---	ROL		-0.146	-0.131	0.008
SHOPENJ	<---	VAL		-0.306	-0.226	***
SHOPENJ	<---	SOC		-0.033	-0.034	0.538
SHOPENJ	<---	IDE		0.043	0.038	0.494

Note. ***sig=0.000.

Results were so varied. First, the distress showed a positive and significant effect on hedonic shopping motivations (exception of the role dimension). In addition, the excessiveness showed only a strong effect on the gratitude dimension of hedonic shopping motivation. Both of these effects confirm the proposed hypothesis supposing a positive effect of cyberchondria on the hedonic shopping motivations. This confirms partially the fact that excessive health-related anxiety and its relative distress may lead to a search for reducing the stress and for releasing the pressure. However, the compulsiveness showed a significant and negative effect on the adventure, social and value motivations in the shopping. This was also the case of reassurance which showed a negative impact on gratitude, role and idea

(exception for a positive and significant impact on value motivation).

When it comes to the impact of hedonic shopping motivations on online shopping enjoyment, results also seem to be mixed. Seeking gratification and adventure leads to online shopping enjoyment. However, as bargaining hunters, these shoppers cannot find pleasure in the online context.

The fourth model (Model 4) was a second full mediation model (no direct effect on online shopping enjoyment and everything is mediated by the COVID-19 fear). This model had demonstrated a significant mediating effect of fear (standardized total effect=0.867; p=0.000). The cyberchondria has also a strong direct effect on COVID-19 fear (e.g. λ excessiveness on the fear=0.381; p=0.000) (Table 4, Table 5).

Table 4

The Impact of Cyberchondria on the Fear from COVID-19

			Hypothesis	Estimates	Standardized RW	P
FEAR	<---	EXC	H4a	0.469	0.381	***
FEAR	<---	COM	H4b	0.227	0.224	***
FEAR	<---	DIS	H4c	0.329	0.294	***
FEAR	<---	REA	H4d	0.064	0.063	0.149
SHOPENJ	<---	FEAR	H5	0.608	0.658	***

Note. ***sig=0.000.

Table 5

Testing the Mediating Effect of Fear of COVID-19 (Model 4)

The Mediating effect		DIS	COM	EXC	REA	FEAR
Standardized direct effects	FEAR	0.182***	0.109***	0.270***	-0.009*	–
	SHOPENJ	–	–	–	–	0.597***
Standardized indirect effects	SHOPENJ	0.121***	0.072***	0.179***	-0.006*	–

Note. ***sig=0.000; *sig<0.050.

The model estimates the interactive effect of cyberchondria and COVID-19 fear on online shopping enjoyment (H4 a, b, c and d) while controlling for the direct effect of each variable. A bootstrapping technique was used to calculate confidence intervals around indirect effect estimates, with confidence intervals that exclude zero providing evidence of a mediation effect (Preacher & Hayes, 2008; Zhao et al., 2010).

The results from each analysis are presented in Table 5. The table is organized such that the direct and interactive effects of cyberchondria and COVID-19 fear on online shopping enjoyment are shown first.

Study results support H4 and H5, as the cyberchondria and COVID-19 fear interaction have a positive and significant effect on online shopping enjoyment (see Table 5). This indicates that during the current COVID-19 pandemic, the relationship between COVID-19 fear and online shopping enjoyment grows significantly stronger as individuals are becoming more anxious about their health. To conclude, we may assume that online shopping enjoyment is mainly guided by fear rather than hedonic shopping motivations (avoidance rather than approaching). Consumers are going online guided by the fear to be contaminated and by searching for a safer shopping context.

Discussion

Our results indicate that during the current pandemic, cyberchondria is becoming a fact as it occurs among non-clinically diagnosed people. Regarding potential effects on consumers' behavior, this study was the first to find that the cyberchondria was associated with an increased online shopping enjoyment guided both by a developed fear from this virus and hedonic motivations. In particular, this study found strong and positive correlations between the cyberchondria and the fear from COVID-19. However, only two dimensions could be considered as antecedents for hedonic shopping motivations namely the distress and the excessiveness. To reduce the general health anxiety and the excessive worry about ones' health, these findings may indicate starting points for some business and marketing interventions in times of a virus outbreak. Commercial websites provide messages regarding the free of risk context that they are offering during the COVID-19 crisis. Cyberchondriacs may use them to acquire effective emotional coping. Furthermore, in order to demonstrate that online shopping may be considered as a safe space, where anxious people may escape, businesses should elucidate clear pathways of action so that consumers feel empowered to tackle the pandemic

effectively. This study may present online shopping as a relief from the psychological distress and the fear associated with COVID-19 threatening both individual psychological wellbeing and public health outcomes.

In addition, cyberchondriacs indeed show their motivations toward hedonic shopping experiences. But, surprisingly, hedonic shopping motivations appear to contribute differently to online shopping enjoyment. Gratification seeking was found to be the key hedonic motivation contributing to enjoying online shopping, whereas in emerging markets such as Tunisia, bargaining hunting had a negative effect on it. Taking into consideration these results, public health communicators and marketers should highlight further the power of shopping in terms of mood repair and stress and health anxiety release. However, should carefully observe this health-related distress that may lead to the adoption of some critical behaviors such as online impulsive shopping behavior.

Our study had several strengths. To the best of our knowledge, it was one of the first studies to investigate the impact of the cyberchondria on shopping experiences during the COVID-19 pandemic. This is particularly important, as this study serves as some of the first data about the mental health impacts of the COVID-19 pandemic. However, our study suffers from some limitations. The first could be associated with the convenience sampling method which may limit the generalization of our findings.

Another limitation should be mentioned. The recruitment procedure may induce some responses' bias. Being limited to online recruitment, particularly from social media communities, may limit the validity of our results to people with a high level of Internet familiarity. As our outcome variables are usually depending on the product category, the generalizability of the result is also questionable if we consider some product category differences. Testing the proposed cyberchondria model in a specific domain will surely offer more reliable results.

In addition to the method, the timing also may create some problems in interpretations and managerial recommendations. This study was conducted during a pic of virus spread and a total panic was recorded during the data collection period. It would be interesting to examine the cyberchondria after the storm to evaluate how far the consequences are persisting. It would be beneficial to conduct further longitudinal research into the psychological and cognitive impact of cyberchondria as it continues to persist, as well as its consequences on the shopping experience. Our cross-sectional study needs to be completed by experimental methods that would be advantageous to test the proposed causality relations. Furthermore, the survey responses were self-reported data. Thus, empirical observations and data from recreational services providers could be used to support these findings.

Another priority for future research should be to clarify the relationships between cyberchondria and other coping strategies adopted to reduce distress or seek reassurance. This will improve our understanding of the coping repertoire of cyberchondriacs. To the best of our knowledge, there are currently no specific business solutions for cyberchondria. Our findings of relationships between fear of COVID-19, hedonic shopping motivations, online shopping enjoyment and cyberchondria shed light on potential interventions that need to be verified. Recently, it was argued that the cyberchondria, and intention to self-isolate increased intention to make unusual purchases (Laato et al., 2020). However, although retail sales increased during the early stages of the COVID-19 pandemic, an overall decrease in the use of recreational services was observed. This change in consumer activity is forcing recreational services providers to quickly adapt their business to the new circumstances. This study proposes using online shopping as an emotional regulation tool that may reduce health related anxiety and may increase overall mental well-being. This will then provide some important information for businesses and health organisms to tackle these mental health-related issues in response to other similar societal disasters. This will be a call for future research to investigate the alternative ways to increase enjoyment and to reach new consumer enchantment as this traumatic stress could lead to the development of avoidance behaviors or passive lifestyles after the pandemic (Zhang & Ma, 2020).

The cyberchondria led by the COVID-19 pandemic may be temporary and have less impact on consumers' behavior as these later will be familiarized with the health information overload and with the overall situation. In addition, cultural differences and social influence may play a crucial role during this period. An avenue of future research could be testing this model in different cultural contexts and extending the research model by including social influence forces. Accordingly, scholars are encouraged to take opportunities to collect empirical data on purchasing experiences to further expand our knowledge on consumers' behavior during catastrophic situations.

Conclusions

The consequences measured in the current work were some among other effects of mental health on consumers' shopping attitudes. Mental wellbeing still faces considerable challenges, taking into consideration the long-term drawbacks of the current pandemic. It is more than necessary to promote social acceptability and to afford a digital context in which cyberchondriacs may have an anxiety relief context.

Ethical Approval

The study protocol was consistent with the ethical guidelines of the 1975 Declaration of Helsinki as reflected in a prior approval by the Institution's Human Research Committee.

Funding Source

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LETTER TO THE EDITOR

LETTERS TO THE EDITOR

Interdisciplinary Integrated Tools to Problem Solving: How to Apply to Writing a Thesis and Planning a Research

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Dear Editor,

Writing a thesis or a research proposal poses enormous challenges specially in these times of information superabundance. And the positive side is that we have a lot of information to use during our research.

The other phenomenon to take into consideration is the misinformation and how it could affect our research. Again, we can overcome this difficulty by applying structured research methods.

The methodology proposed here starts with understanding the research problem applying the systemic thinking; then looing for information with mapping studies; evaluating the publications obtained with information quality tools; testing multiple hypothesis at the same time; and finally, if needed preparing a Gantt chart to plan the research.

All these methodologies when together highlight the positive side of the synergies while minimize the impact of the cognitive bias.

The aim of the study. To describe the importance of having a structured tool to write a thesis or setting up a research project.

The proposal presented here is a problem-solving course that includes five methodologies: systems theory, mapping studies, information quality, and competing hypothesis, plus the Gantt chart. When they are used in sequence, it is possible to obtain outstanding results and also the process is auditable in its whole extension.

This course has been presented several times at universities and other places in Argentina and also in Peru, with interesting and relevant results.

We consider that the first situation to address is how we see the world, and its problems. To do it, we present a lecture on mental models and discuss the different perspectives we all have when approaching any given subject. The students enjoy a lot this lecture since it allows them to see how different we all are but see this as something positive that helps to build and understand the world, not destroy it.

Then, they are ready to focus on their specific problems and start to understand and work on them.

The second lecture is on the systemic thinking, this method helps them to conceptualize the research problem.

In summary, the key assumptions of this theory developed by Von Bertalanffy (1968) are:

1. Systems exist within systems.
2. The systems are open.
3. The functions of a system depend on its structure.

According to Von Bertalanffy (1968), the system functioning includes inputs and outputs, processes and the components involved. In some cases, the output becomes the input of the system (feedback).

This first step is the one that takes longer since understanding the problem is the most difficult phase. The identification of the process and its components is critical to the next steps of this sequence.

At this point, the students decide with which problem or situation they want to analyse and understand. By doing this, they move out from the words of the ideas to drafting them. This process takes time and requires reflection, and also decisions should be made to set up the limits (system border) and the components – and relations between them – of the problem under study. When doing this conceptualization process, the system is developed with a specific objective and if the objective changes, the system will also do.

Once the system is ready, the third step is to look for information in a structured way. In this methodological sequence, the mapping studies technique will be applied. With the information obtained here it is possible to prepare the State of the art of any thesis or research proposal.

There are many ways to do it, here we will do a systematic literature review (or systematic mapping studies) designed by Kitchencham et al. (2010) from Keele University. Also, Genero et al. (2015) from the Alarcos Group (University of Castilla La Mancha – UCLM – Spain) are leading the field in Spanish-speaking countries.

The outstanding feature of this tools is that to select the different articles when searching in any searching engine, the selection is made if the article answers or not to a research question, it doesn't matter how it does but if. In this way, we are sure that all the possible options are registered.

The methodology includes three phases: planning the review, executing it and writing the report.

In the first phase, many tasks will take place. First, the need for a review must be identified. It is important to note that by doing this review, it is possible to summarize all the information on a topic, in a format that resembles a database.

To begin with the practical steps of this tool, the research questions formulation is the next step. These research questions will be the tool to select the publications, considering whether they answer or not to them, and not how they do (this is important for the later analysis of the results). This way of selecting the publications helps to minimize the impact of our cognitive bias, allowing us to have the whole set of possible answers, and not only the ones we like.

Before performing the search, a protocol must be developed. This plan includes: the identification of the search terms (plus synonyms and other alternative terms, and the use OR and AND, or other Boolean operators is recommended); the sources of information must be chosen and specified (use virtual libraries, Google or other search engines); inclusion and exclusion criteria; and the design of a form to transfer the selected publications and the research questions, usually an Excel sheet.

In the second phase, the review takes place, and all is executed according to the plan. Now, it is important to check all the results, one by one, and the publications that answer the reserch questions will be transferred to the Excel file and the different fields will be completed. The inclusion and exclusion criteria will help to filter the

results obtained, and finally the result will be a set of publications that fulfil the requirements and answer the research questions.

Once we finish downloading and answering the questions, it is time to analyse the results: comparative analysis and graphs are easy to make and to show the state of the art of any given topic. Studies that using the traditional methods could take ages, using this tool is possible to be done in just minutes.

The fourth step is applying the information and data quality tools; since the information obtained could be validated using the information quality techniques, and in this way, it is possible to evaluate its properties (Espona & Fisher, 2015). In this sense, experts at the Massachusetts Institute of Technology (MIT) (Cambridge, Massachusetts, USA) developed an information quality method. Lately, professionals from other universities and countries expanded and added more elements to it.

Wang and Strong (1996) developed a framework to evaluate and hierarchically organize information. To create this method, they sent a survey to information consumers and master's in business administration (MBA) students asking about the most critical attributes that information should have. The result was a list of 179 attributes. After that, they performed a second survey to learn and understand the importance of the attributes identified. Finally, they come out with a list of 15 dimensions, grouped into four categories:
- Intrinsic (accuracy, believability, objectivity, and reputation);
- Contextual (value-added, relevancy, timeliness, completeness, and amount of data);
- Representational (interpretability, ease of understanding, representational consistency and representation conciseness);
- Accessibility (access and security).

It is important to point out that these dimensions could be evaluated both quantitatively and qualitatively. And that the clear definition of all of them contribute to the evaluation, understanding and communication in the field of knowledge and in the organization in which the research is taking place.

The fifth step is competing hypothesis. This tool was developed by Heuer (1999), an intelligence analysis expert from the Central Intelligence Agency (CIA), during the Cold War, and a few years later was provided to the public.

This tool is especially useful in cases of complex problems, with many possible scenarios and a lot of evidence to analyse. It allows to study simultaneously all likely hypothesis and verify them with all the available information simultaneously. In the case of a thesis maybe is not always useful, but yes in the case of a research where more hypotheses are on the table.

Also, all the evidence already gathered in the mapping studies could be considered the evidences in this method, saving a lot of time and creating a positive synergy. The outcome will be a table including the evidence and the hypotheses and the results of the evaluation performed (Table 1).

Table 1

Resulting Table as Consequence of the Execution of the Competing Hypothesis Method

Evidences	Hypothesis 1	Hypothesis 2
Evidence A	Support (+)	Support (+)
Evidence B	Highly support (++)	Not support strongly (--)
Evidence C	Support (+)	Not apply (no relation)
Evidence D	Not apply (no relation)	Not support (-)
Evidence E	Not support (-)	Support (+)
Subtotal	4 (++++); 1 (-)	2 (++); 3 (---)
Total	+3 (+++)	-1 (-)

The winning hypothesis, in the Table 1 example will be the Hypotheses 1. But it is important to remember that the winning hypothesis has more support according to with the available evidence and not a higher probability of occurrence.

In the case this method is performed, and a winning hypothesis is identified, it means the solution to the problem with more support in the available information has been found.

Finally, it is time to plan the implementation using the Gantt chart. To do it, first the objectives and tasks must be identified. There are four phases: design, planning, execution and evaluation. The objectives preferable must be SMART (Doran, 1981).

In this last step, must be taken into consideration the system designed at the beginning and put it together with the winning hypothesis. This is part of the diagnosis, that needs also a survey to include the qualitative evaluation of the situation. Planning and Executing follows the usual logic but during the evaluation is good to add a new survey to include again the people involved and get their opinion, always critical to the success.

This problem-solving course has been presented in different formats many times, to different audiences, with different objectives, with outstanding results.

Considering the audience and their specific needs, the focus is on the different methodologies. Usually, the most demanding stage is the implementation of the systemic method but at the same time it is the most rewarding, since many participants experience Eureka moments when discovering their real problems.

The methodologies included in the courseled to finding the solution to many problems, in an unbiased, structured, auditable and at the same time, in a simple way.

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LETTERS TO THE EDITOR

LETTER TO THE EDITOR

Revisiting Learner-Centered Ideology, Management, and Paradigm

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Dear Editor,

As we know, the educational curriculum refers to academic content taught in schools or a collection of lessons, assessments, or a particular program or course taken on by students (Alanazi, 2016). Granting it is essential to note what a curriculum will achieve, what students will do and use to learn, and what teachers will use to teach the class; however, as to Crowley (2021), the curriculum is in no way neutral – it, at all times, mirrors ideological views.

From a learner-centered ideology, it is presumed that education manifests itself in drawing out people's inherent goodness and capabilities for growth (Schiro, 2013, pp. 5–6). As a teacher wanting to operate in this ideology, I believe the learners have their own abilities for growth. This ideology is all about bringing out the competency within them. On the other hand, classrooms are busy public places; events are unpredictable (Ming-tak & Wai-shing, 2013, pp. 10–11). This requires the teachers to develop their range of classroom management strategies. Setting up a classroom is an essential part of teaching and learning. It involves designing the classroom atmosphere, rules, and expectations (Williamson, 2008, p. 3). Granting there is no sole way of managing a wide array of classrooms, fruitful classroom management is tied to student engagement and empowerment (Honigsfeld & Cohan, 2014).

Classroom management practices can be seen from teacher-centered to student-centered (Garett, 2008). Only when the attempts of student-centered management fail should teachers have to resort to controlling or intervention strategies (Ming-tak & Wai-shing, 2013, p. 1). Teachers must learn several things about themselves as managers of the classroom. Likewise, teachers must also learn about their students as individuals and show them they are cared for in many different ways (Williamson, 2008, p. 21–22). Undeniably, many teachers have a tough time voluntarily ceasing and surrendering control in the classroom.

Part of the problem is that they might not recognize the process to be accounted for. Positively, it is not giving up control but allowing the students to control themselves to the expectations presented in the room. Letting students at all grade levels be empowered in the room will enable them to make better choices (Williamson, 2008, p. 28–29). Teachers are crucial in crafting essential decisions – to provide instruction or produce learning. These perspectives – instruction or learning paradigm – genuinely affect how teachers introduce themselves in front of the class (Barr & Tagg, 1995, p. 16). Although providing instructions and producing powerful learning environments may seem different from the issue of classroom management, it cannot be denied that it supports each other. In a case study conducted by Garett (2008), the three elementary teacher-participants who were operating in a student-centered manner of giving instructions and producing learning environments, in some cases, used teacher-centered classroom management strategies. This implies various ways to supplement the learning environment with management strategies.

According to Biggs and Tang (2011, pp. 17–20), there are three levels of thinking about teaching. The first, blaming learners, focusing on what the student is. Here, if students do not learn, it is not that it is whatsoever improper with the teaching, but that students are incompetent, uninterested, or with some defect. The second, blaming the teacher, focusing on what the teachers do. The third focuses on what the student does. It is a student-centered model of teaching, with teaching supporting learning. Except learning takes place, expert instructions are immaterial and irrelevant.

The third level of thinking about teaching captures the learning paradigm. A learner-centered paradigm advocate must not end on just reading and knowing the learner-centered curriculum ideology itself; instead, the paradigm must drive them. The learning paradigm must capture them. As stated by Barr and Tagg (1995), "For many of us, the learning paradigm has always lived in our hearts… But the heart's feelings have not lived clearly and powerfully in our heads" (Barr & Tagg, 1995, p. 14). In a learner-centered class, students do not depend on teachers all the time for approval, instructions, correction, or praise. Students do not disregard each other but look at each other and communicate. When in doubt or difficulty, students seek the teacher's advice, but only after they have made an effort among themselves to solve problems. Working together is the emphasis, e.g., by pairs, groups, and/or as a whole class. Also, students may be teacher-led in a student-centered class. The teacher will clarify important things and/or give some practice before working together. Teachers will be available to provide advice and encouragement while students work together. After finishing the work together, their teacher will provide them with feedback, suggestions and entertain questions. The bigger the class, the more obligatory it is to have a learner-centered class (Jones, 2007, pp. 4–5). We may not even reach some students in a jam-packed classroom as we circulate. It is not easy to monitor and participate in activities simultaneously. Should we take part in class discussions as equal partners? Continuous interference is not likely to encourage students' autonomous academic-related behaviors.

Some people are more dominant, outgoing, opinionated and/or imaginative than others. Sometimes others sit and listen, getting bored or feeling frustrated. In other cases, one student is happy to be a "passenger". Reshuffling groups methodically can help. Shyer and introvert learners must not constantly be combined in a single group. It may be of value to get rid of the dominant, bossy, and/or influential ones from each group and assign them all together when one student has dominated each group. On the other hand, some may not aspire to voice out argument or lack certainty; they may not yearn to talk much. In this case, teach students schemes, to inspire them to speak more like asking follow-up questions (Jones, 2007, p. 9).

It is necessary to provide powerful learning environments as a paradigm rather than merely providing instructions. It is highly substantial to note that expert teaching comprises mastery over different teaching techniques.

The learning paradigm resolves the ends, not just improving the means. Learner-centered ideology was not created just as an espoused theory (i.e., set of ideologies people propose to explicate actions), but also as a theory-in-use (i.e., ideologies we can conclude from how individuals behave) (Barr and Tagg, 1995, p. 14). If the students do not learn, do not instantly blame them and tell them that they are incapable, unmotivated, or even possess an academic defect. Instead, focus on what the student does and how it relates to teaching, integrating teaching and learning.

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