REVIEW ARTICLE

ICONIC APPROACH FOR THE ASSESSMENT OF PAIN, DISCOMFORT OR PAIN MANAGEMENT PROGRAMS IN CANCER AND OTHER DISEASES

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ABSTRACT

Background: Pain and discomfort linked to cancer and other diseases or disabilities constitute a public health problem. Many tools and approaches are used for the assessment of pain. Accurate and timely assessment of pain is essential for the efficient evaluation of pain treatments in chronic pain management. A wide variety of tools to assess acute and chronic pain exists. Instruments have been developed in diferent languages and approaches. **Objectives:** The aim of this study is to set the panel of iconic-based tools to assess pain and analyse their strengths and weaknesses. **Methods :** A bibliographic review was conducted on *Pubmed*, *Scopus* and *Science Direct* databases using '*Iconic*', '*Pictogram*', '*Assessment*' and '*Pain*' as key words. Eleven articles were found (figure 1) relevant for the topic in the three databases (PubMed =3, Scopus = 6, Science Direct= 2). Their contents were analyzed and synthesized in Table 1. **Results:** We found eleven distinct questionnaires. The first class contains numeric-based tools as Iconic Pain Assessment Tool (IPAT), Pain-QuILT, Pain-QuILT-2 and the pictogram for breast cancer. These tools allow an accurate, exhaustive and continuous description of pain that could be saved on digital supports to evaluate cancer care programs. The second class contains paper-based tools as COOP/WONCA, SLAN and Iconic Interdisciplinary tool. These are used to assess pain and discomfort holistically in different clinical contexts. The third class is also constituted from paper-based questionnaires and contains instruments **as ODEON for** ophthalmic diseases, Pictogram of pain quality for Down syndrome, Pictogram for gastric discomfort and Pictorrino for disabilities linked to laryngectomized patients. This class allows a detailed description of discomfort in specific illness or disability where patients are unable or deficient in communicating verbally. **Conclusions:** The numeric-based questionnaires allows continuous and timely assessing and a secure recording of pain on a numeric database of the profiles integrating the quality, the intensity and the localization of pain for a great number of patients. The second class is applied to different contexts and contains tools giving detailed description on general health. The third class allows a detailed and accurate description of pain. It is applied specifically applied to Down Syndrome, laryngectomized patients, gastric or ophthalmic diseases.

Key words : *Assessment, Iconic, Management, Pictogram, Pain, Diseases.*

1. INTRODUCTION

Pain is a real problem of health. Despite the great number of programs and tools, the interdisciplinary approach for the assessment and the development of the management of chronic pain remains difficult. Accurate and timely assessment of pain is essential for the efficient evaluation of pain treatments in chronic pain management. However, authors observe that clinicians do not use data on systematic assessment of pain to adapt their medication practices [1].

Pain expressed by the patient himself and by the physician is complementary and help to set an accurate and specific description and evaluation of pain. This allows physicians to propose the therapeutic programs to relieve pain efficiently.
The tools used to state an accurate description of pain or to follow-up a therapeutic program, for instant or continuous measurement, should consider the cultural context of the patient, his specific abilities and/or disabilities and his illness [2-7].
There is a wide variety of tools to assess acute and chronic pain. Instruments have been developed in different languages and approaches. A review to set the panel of tools adapted to Arabic for assessing cancer related pain has been done [8]. Among these, three instruments have been adapted to local Arabic language and tested with cancer patients in Morocco [9-11].

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Different approaches are applied. There are tools based on verbal approach such as Mac Gill Pain Questionnaire (MPQ) and the Brief Pain Inventory (BPI) [12, 13]. Others are based on iconic approach [14]. The iconic tools are paper-based [12, 13], numeric-based or web-based [14-16].

The iconic approach minimizes the bias and difficulties related to native language, cultural, educational level, social contexts and cognitive or verbal disabilities, in reporting faithfully pain experiences.
The aim of this study is to set the panel of tools based on iconic approach for the assessment of pain and discomfort on three bibliographic databases and to study their strengths and limits.

2. METHODS

A systematic bibliographic research on three databases (PubMed, Scopus, and Science Direct) was conducted using the key words: *Iconic*, *Pictogram*, *Assessment*, *Pain*. The outline of the research result is presented in Figure 1. The result of research on PubMed gave 3 articles [14-16].

The selection procedure from Scopus database using as key words: *Iconic*, *Assessment*, *Pain*, gave the same 3 articles obtained from Pubmed. The three articles are all relevant for the topic. A second research in the same database using as KW: *Pictogram, Assessment*, *Pain* gave 10 articles. Only 6 were relevant for the topic [17-22].The result of this systematic bibliographic review from Science Direct database following the line of the figure 1 gave 35 bibliographic articles. Only 2 were relevant for our topic [23, 24]. Synthetically, we retained 11 relevant articles for our issue (Pubmed=3, Scopus=6, Science Direct=2)

3. RESULTS

All the articles selected were analyzed and synthesized. An overview is reported in table 1. All the tools were developed in English language except ODEON [18] in French and Pictorrino [17] in Spanish. The tools are developed in countries as Belgium, Canada, France, Germany, Ireland, Netherlands Spain and Switzerland. The detailed analysis of each tool is as follows.

The **Iconic Pain Assessment Tool** (IPAT) is used to evaluate the comfort, the ease, the enjoyment and to analyze its strengths and weaknesses [14]. The IPAT is an iconic numeric web-based questionnaire installed or uploaded on a laptop computer with an external mouse. This tool allows a dairy reporting of the quality, the intensity and the location of pain permanently (morning, afternoon, evening and overnight). It is constituted by 5 icon-items of pain quality as '*Burning, Freezing, Squeezing, Lacerating, Aching*'. The intensity of pain is measured by the Numeric Rating Scale (NRS) ranging from 0 for '*No pain*' to 10 for '*Worst possible pain*' linked to each quality icon-item. Another common measure of pain intensity, the Visual Analogue Scale (VAS), is also integrated to this tool. A horizontal or vertical line of fixed length with anchors as '*No pain*' and '*Worst pain imaginable*'. The patient places a mark along the line to estimate the intensity of his pain. The location of pain is specified through a diagram of the anterior and the posterior sides of the body, where the patient can specify the pain quality and intensity using the icon-item simultaneously to describe accurately his pain.

The **Pain Quality, Intensity, Location, Time (Pain-QuILT)** is an iconic numeric-based tool also [15]. It was studied by these authors to test the ease to use, the time of completion, the patient's preferences and to compare the patterns of self-reported pain to the patterns given by the classical instruments as the MacGill Pain Questionnaire (MPQ) and the Brief Pain Inventory (BPI). The Pain-QuILT associates icon-items subtitled by verbal descriptors of pain installed on a laptop computer with an external mouse. It is constituted by 16 icon-items that are the iconic representation of the 15 verbal descriptors of the Short Form- MacGill Pain Questionnaire (SF-MPQ) and one additional icon-item '*Others*'. The virtual body-map is codified into 100 distinct regions integrating a NRS ranging from 0 to 10 to attribute to each icon-item. The patterns of pain are recorded in a database and processed in order to design the evolution of pain for each patient in terms of time, quality, intensity and location.

The **Pain-QuILT-2** is an iconic numeric-based form too [16]. In this publication, the objective was to evaluate the clinical feasibility of the Pain-QuILT-2 through parameters as the ease to use, the time of completion, the patient's preferences, the barriers to use on adolescents, in a follow-up of chronic pain. These parameters have been compared to a comparator paper-based tool.

The Pain-QuILT-2 associates icon-items and verbal descriptors of pain supported by a laptop with external mouse. It has the same structure and constitution than the Pain-QuILT described above. The unique difference is that the body-map is codified into 110 distinct regions instead of 100 regions for the Pain-QuILT.

The tool named **Pictorrino** [17], is an iconic paper-based tool developed to communicate the needs of laryngetomized patients on postsurgical period. The tool is constituted from 15 icon-items subtitled with 15 spanich verbal descriptors. The panel of icons includes a first class of items on direct assessing of pain as '*Me duele la cabeza, Me duele el cuello, Me duele la vía'*. A second class of items is dedicated to discomfort on general health state as '*Estoy bien, Estoy triste, Tengo frio, Tengo calor…'*. The last class of items is on general needs as '*Quiero orinar, Quiero acostarme, Quiero levantarme…*'. The tool contained also a VAS of pain with 11 points varying from 0 to 10.

The tools **SLAN and EuroQol EQ-5D** [24], have been studied to examine the scores of functioning in Intellectual Disabled people (ID) compared to general population using two distinct forms. The tools have been administered in a face-to-face interview to adults with intellectual disability and others with physical disability (PD) in Ireland.
The SLAN questionnaire, a self rated health and quality of life tool, is an iconic paper-based questionnaire constituted from 3 parameters or items 'general health, mental health, quality of life' integrating a face pictogram sequence for the 4 answer choice corresponding to a 4 options Likert Scale, to assess the intensity of discomfort.

The EuroQol EQ-5D is a verbal paper-based questionnaire including 5 items 'Mobility, Self-care, Ability to carry out one's usual activities, Pain, Anxiety' with 3-4 options for each question.
Another tool, the **Questionnaire of pain assessment in ophthalmic pathologies ODEON**, has been developed by the authors to measure the quality, the intensity and the duration of pain in order to describe qualitatively pain relieve and to compare the different ophthalmic pathologies [18].

The instrument is an iconic paper-based form developed in French. It contains five sections. Section 1 is composed from 3 questions about health in general. Section 2 contains 3 questions about the eyes and the eyesight. Section 3 considers eye pain. It is constituted from 22 questions and 3 quantitative scales. Section 4 is dedicated to eye pain relieve and it is composed by 9 items. The section 5 entitled Pictogram and descriptors of eye pain. It is composed from 33 icon-items subtitled by verbal descriptors inspired from the propositions of the patients themselves in the first step of the development of the questionnaire. The elaboration of the pilot version of the tool has been conducted according to the methodologic standards.
The **Pictogram of pain qualities for Down Syndromes adults** [19] is studied to test the ability of use of self-reporting tool of pain quality among adults with Down Syndrome (DS).

The tool is an iconic paper-based questionnaire composed from a pictogram of pain quality represented by a serie of four icon-items subtitled by the corresponding verbal descriptors: *Stinging pain*, *Throbbing pain*, *Burning pain*, *Pressing pain*. The icon-items are drawn in the navel region of the body diagram. In accordance to the aim of this first serie, an additive symbol of pain is illustrated by the expression of the face but it is represented by the same symbols in the four squares of each icon of pain quality. The three first descriptors of this serie are inspired from the MPQ.
Another material is also associated, the facial pain intensity scale for exploring the ability of DS people to measure their pain using an iconic pain intensity scale. The serie is composed by 3 icons subtitled verbally by '*Extreme pain*', '*No pain*', '*Moderate pain*'. This sequence is inspired from the Facial Affective Scale (FAS) developed by McGrath [25] and retook and adapted by other authors.

A serie of 3 separated drawn faces of pain extracted from the 9 facial icons of the FAS is also presented to the patients. The specific objective of this serie is exploring the ability of DS people to arrange in a growing intensity order the icons from '*No pain'* to '*Extreme pain'*.

The **COOP/WONCA** [23] has been translated in this study to Moroccan Arabic and Tarifit and tested for its adequacy among Moroccans and Turkish living in Netherlands.
The COOP/WONCA charts (COOP: Dartmouth; WONCA: Word Association of Family Doctors) is an iconic paper-based tool. It contains 6 charts for describing the situation of the patients in the past 2 weeks. The parameters followed are focused on general state and pain. The graphic representation items are about 'P*hysical fitness, Daily activities, Social activities, Feelings, Overall health, Quality of Live and Pain'.*

Another tool, the **Questionnaire associated to pictogram of body map for breast cancer** is used in the follow-up of breast cancer. The study aimed to develop a tool for the visual assessment of pain perception in breast cancer **[20]**. A professional pen tablet associated to a digitalization processing program have been used. Each patient was assigned a pain map. A numerization phase to analyze pain maps using a Java-based program is realized.

The tool is an iconic numeric-based tool on tablet. The Black color represents a pain area and it is attributed a score of 0. The white color corresponds to an area with no pain and the area is attributed a score of 255. The result of an individual and instantaneous assessment of pain localization is processed and recorded as an image file. Using a gray scale this result or a set of results gathered from several times for a same patient or from a subgroup of patients is expressed also in terms of intensity.

Another tool, **Pictograms to assess gastric discomfort** is an iconic paper-based patient reported outcome questionnaire. The aim of this paper was to evaluate the use of pictograms for the assessment of discomfort in dyspepsia symptoms [21].

The tool used contains 10 verbal descriptors of discomfort associated to pictograms (1 icon to indicate the location of the stomach and 9 icons for different symptoms: *post-prandial fullness, early satiation, epigastric pain, epigastric burning, bloating, nausea, vomiting, heartburn, regurgitation*) to assess the quality of discomfort or pain. Beside the pictogram, a frequency scale (1-5 ; 1= less than once per week ; 2=once per week ; 3=2 to 3 times per week ; 4=4 to 5 times per week ; 5=daily) and a severity scale (1-5 ; 1=very mild ; 2=mild-present but not bothersome ; 3=moderate-bothersome ; 4=severe-interfering with daily activities ; 5=severe-rendering daily activities impossible) of discomfort are integrated to this tool.

The last tool, **Iconic Interdisciplinary tool to assess pain and discomfort** is an iconic paper-based tool alsoo **[22]**. The aim of the study was to develop a short interdisciplinary tool for the assessment of pain and the evaluation of the rehabilitation programs inspired from the international classification of inability (ICF) in the context of the musculo-skeletal acute care setting. The tool contains 8 icon-items on body function and 16 about daily activities illustrated in an understandable way.

Figure 1 : Bibliographic Research strategy on pain assessment using iconic approach in Pubmed, Scopus and Science Direct bibliographic databases, 2017.

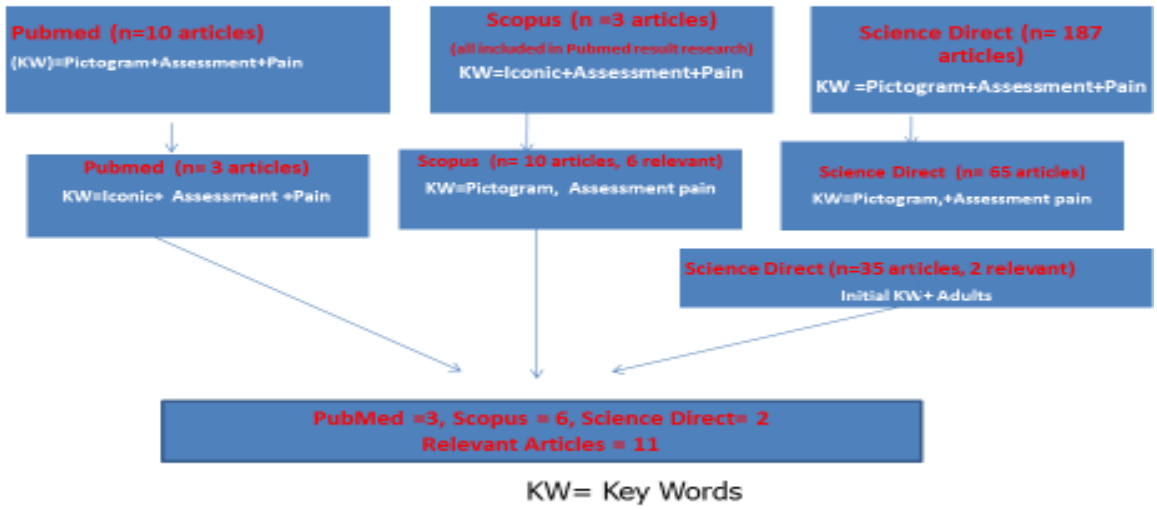

Tableau 1: Overview of the articles selected through Pubmed, Scopus and Science Direct bibliographic databases on iconic approach to assess pain (N=11).

Authors	**Journal/Year**	**Title**	**Objectives**	**Population** **Disease** Pain	**Tool/Approach**	**Findings** **Conclusions**
1-Beuzón et al.	Acta Otorrinolaringologica espanola. 2009.	Communication of needs in laryngectomized patients: Pictorrino.	To elaborate and validate pictogram for laryngetomized patient to express their needs.	10 laryngetomized patient for expression of the needs on postsurgical period. 1st January to 30 September 2007. Spain.	Pictorrino: -Iconic paper-based tool. Pictograms 15 items (15 icons associated to 15 Spanish Verbal descriptor). VAS of pain (0-10).	The tool is understandable and adapted to this group of patients.

2-Boland et al.	Disability and Health Journal 2. 2009,	Self-rated health and quality of life in adults attending regional disability services in Ireland.	To examine scores of functioning in disabled people compared to general population.	247 adults with intellectual disability (ID) and 180 with physical disability (P/SD). Ireland.	-SLAN : 3 Items (general health, mental health, quality of life) integrated to a pictogram face sequence (Likert Scale 4 options) to measure the intensity of discomfort. -EuroQol EQ-5D: Paper-based questionnaire, 5 verbal questions (mobility,self-care, ability to carry out one's usual activities, pain, anxiety).	Clients with ID had mental health lower than physical or sensory disability. People with P/SD had low Qol than the general populationd and the ID groups. The tools need some adaptations to people with disabilities.
3-Colin et al.	Journal Français d'Ophthalmology. 2004.	Developing a questionnaire to evaluate pain in ocular or periocular pathologies: The ODEON questionnaire.	To develop a questionnaire to measure intensity and duration of pain, to compare qualitatively pain relieve between different ophthalmic pathologies.	Patients with Ophthalmic pathologies (ocular or peri-ocular) acute and chronic pain. N =20. France.	ODEON, Iconic paper-based form : -5 different sections on qualitative and quantitative descriptions of health, pain eye, eyesight, eye pain relieve -Section 5 is a Pictogram, 33 icon associated to verbal descriptors in French.	The version studied is a pilot version of this tool and it is under validation process.
4-De Knegt et al.	J of intellectual and developement al disability.	Comprehension of pictograms for pain quality and pain affect in adults with	Test the ability of use of self-reporting tool pain by adults with Down syndrome	Adults with DS (N=39), 2012, Netherlands.	Iconic Paper-based tools.	The tool is understandable and usable to DS patients.

	2016.	Down syndrome.	(DS).		-Pictogram for pain qualities (4 icons: Stinging, Throbbing, Burning, Pressing). -Facial pain intensity scale (3 icons: No pain, moderate, extreme pain) -Facial affective Scale (FAS): Drawn 3 icons to make in growing order.	
5-Hoopman et al.	J Clin Epidemiol. 2008.	Translated COOP/WONCA charts found appropriate for use among Turkish and Moroccan ethnic minority cancer patients.	-Translate to Moroccan Arabic and Tarifit -Test the adequacy.	-87 Turkish and 74 Moroccan cancer patients, May 2000 to September 2002, Netherlands.	Iconic paper based approach in chronic pain. Tool is COOP/WONCA Charts : 6 charts referred to past 2 Weeks (Functional Health assessment charts) - Physical fitness -Daily activities -Social activities -Feelings -Overall health -Quality of Live -Pain.	The tool has adequate feasibility.
6-Jud et al.	Breast Cancer Research and Treatment. 2010.	Pain perception and detailed visual pain mapping in **breast cancer** survivors.	-To present a method of visual assessment of pain areas on a pictogram of the body. - Compare subgroups.	-Breast cancer patients (N=343), April 2004-November 2005, Germany.	-Iconic numeric-based tool on a tablet and a pen to mark the area of pain (Black=pain area with a score 0 ; white=no pain with a score 255) on a pictogram of body.	The tool allows indicating areas of pain in subgroups but needs some adaptations for assessing intensity and quality of pain.

7-Lalloo C, and Henry JL.	*Pain Res Manage. 2011.*	Evaluation of the Iconic Pain Assessment Tool by a heterogenous group of people in pain.	To evaluate feedback (comfort, ease to use, enjoyment) strenghts and weaknesses of the tool.	-23 individuals with a variety of chronic pain, able to use laptop and mouse to describe their pain, December 2008 to March 2009, Canada.	Iconic Pain Assessment Tool (IPAT) : Iconic Numeric web-based approach Tool, reporting Quality, Intensity and location in permanent diary (morning, afternoon, evening, overnight). -5 icon-items of pain quality. - NRS (0-10) below each quality icon-item. -VAS.	IPAT is comfortable, easy to use and acceptable.
8-Lalloo C , Kumbhare D, Stinson JN et al.	Journal of Medical Internet research. 2014.	Pain-QuILT: Clinical feasibility of a web-based visual pain assessment tool in adults with chronic pain.	-Ease to use -Time completion -Patients preferences -Compare patterns of self-reported pain to MPQ, BPI.	Adults (N=50), with Chronic pain, Mean age 50 years 54% Women. Ontario, Canada	Pain-QuILT (Quality, Intensity, Location Tracker) : -Iconic Numeric Form on laptop Computer. -Icons (16) - Numeric Rating Scale [0-10]. -Virtual body-map (100 regions) ; -Patterns of pain are recorded in database and processed to clear the evolution of pain time location quality intensity compared with pain management practices.	Pain-QuILT Found easier to use than MPQ and BPI. Majority prefered Pain-QuILT (58%). High correlation between Pain-QuILT And BPI. All tools took less than 5 minutes. Th tool is well

						correlated to standard tools.
9-Lalloo C , Stinson JN, Brown SC et al.	Clinical J of Pain. 2014.	Pain-QuILT: Assessing clinical feasibility of a web-based tool for the visual self-report of pain in an interdisciplinary pediatric chronic pain clinic.	To evaluate clinical feasibility of Pain-QuILT (equal IPAT) : -Ease to use -Time to complete -Preference -Clinical usefulness -Barriers to use on adolescents in a follow-up of chronic pain	-17 Adolescents (12-18 years) with chronic pain from different diseases, attending scheduled clinical appointment. - 9 health team members. Toronto, Canada.	PQ Versus Clinic comparator Tool PQ - Iconic web-based laptop computer tool PQ:Icons (16) and descriptors on a detailed virtual body map (110 Districts) integrating NRS for each site or region of pain. Clinic comparator Tool: paper-based on Quality, Intensity, Location of pain with 11 descriptors (10 fitted, 1 other) 4 open questions.	PQ is a Feasible tool for reporting sensory chronic pain. 88% adolescents prefered PQ.
10-Tack et al.	Alimentary pharmacology and therapeutics. 2014.	The use of pictograms improves symptom evaluation by patients with functional dyspepsia.	To test the assessment of symptoms of dyspepsia using pictograms.	76 Patients with dyspepsia during the last 6 months, Belgium.	Paper-based tool.	Pictograms accompanied with verbal descriptors improve the concordance of the evaluation of dyspepsia symptosm compared between patients and physicians for some icon-items.

					- Pictograms associated or not to Verbal descriptors (1 icon of of the location of the stomach and 9 icons for different symptoms : post-prandial fullness, early satiation, epigastric pain, epigastric burning, bloating, nausea, vomiting, heartburn, regurgitation) assessing the nature and than the -Frequency scale (1-5) -Severity scale (1-5) (1-5) of discomfort.	
11-Weber et al.	Physikalische Medizin rehabilitations medizin kurortmedizin . 2007.	Pain assessment and rehabilitation in musculo-skeletal acute care setting.	To develop an interdisciplinary assessment instrument of patient progress.	Patients (n=269) with chronic pain or announcing chronic pain, 2004, Zurich, Switzerland,	Iconic paper-based tool. Items on body function (8). Items on daily activities (16)	The tool is useful for assessing pain and for the evaluation of the effectiveness of rehabilitation programs.

4. DISCUSSION

Among the strengths of **Iconic Pain Assessment Tool,** the icon-items are subtitled by verbal descriptors of pain quality. This makes the comprehension of the items easier. The intensity scale specifies simultaneously the intensity of pain for each icon-item through the NRS. Other strength point is that tool, as a numeric form, allows the recording of all the data about quality, intensity and location of pain represented on a simple body map in the real time and over the time on electronic support. It allows minimizing the errors of the data transcription and the spacial capacity requirements for the data storage. The recording of pain diaries avoids also memory biases.

The first limit is the reduced number of items. The five icon-items, limits the options offered to the patient for describing the quality of his pain accurately. The use of a computer is also a limiting factor; it needs a level of education and initiation to informatics tools. Beside this, in the case of a trouble with the hand such as injury, stiffness or tightness, the patient cannot report his experience with pain through this tool. The interruption of internet is common in some countries and can really constitute a serious barrier to the application of this tool. However, the results showed that this form is comfortable, easy to use and acceptable.

Beside all the strengths reported for iconic numeric-based tools, **Pain-QuILT** contains a great variety of icon-items that assess direct aspects of pain quality. The 16 icon-items, give the patient the opportunity to express his pain more accurately and to indicate the site of pain on detailed and codified regions on the body-map. Additionally, the NRS integrated to the instrument allow the patient to specify the intensity of pain in each site for each icon-item. The additional strengthening point is the numeric recording of data which requires less space than the storage of paper tools. The analysis of recorded pain patterns allow to identify the improvements recommended for a better pain management practices or protocols.

As a numeric tool, this form is limited to people with specific skills to interact with an electronic platform as a good vision, a hand dexterity, an independent use of mouse and computer and a high educational level.

The authors found that there is a high correlation in terms of the frequency of descriptive words between the MPQ and the icon-items of the Pain-QuILT. They noted also a correlation between the BPI score and the Pain-QuILT average pain score across all body sites. The authors concluded that it is correlated to standard and classic pain tools and it will add a significant value to chronic pain management by the continuous recording of data.

Pain-QuILT-2 has all the strengths mentioned above for iconic tools and numeric forms with the specificity to give to the patients more precision to locate their pain on the body-map with 110 regions.
The adolescents targeted by this study are the perfect group for testing this tool because of the high use and familiarization of computer and internet by this generation.

This tool has the same limiting factors as the numeric forms in terms of initiation to computer, dexterity and educational level.

Health care team stated some barriers to permanent implementation of the Pain-QuILT-2 as technology requirements and underlined the difficulty of the transferability and the concordance of Pain-QuILT-2 data across different web platforms for analysis.

The analysis of the results shows a good correlation between this tool and the Comparator. There was no significant difference in time of completion of the form between the tools compared.

Pictorrino is the unique one adapted to laryngetomized patients with a temporary or a permanent verbal inability. It allows expressing pain, discomfort and general needs, associated to disease or a postsurgical state. Another use of this tool is the aphasia, other neurologic or psychiatric disorders or hearing impaired persons. Despite the limited number of items considering pain directly, this tool integrates an objective item to measure the intensity of pain by the VAS. The conversion of this tool to numeric support is possible.

Pictorrino contains only 3 items on direct pain describing specifically pain location (neck pain, head pain, venous route) and don't contains pain quality items. However, it allows communicating basic needs between the patients and the health care team, which is the reason for its conception.

The tool is understandable and well adapted to laryngetomized patient on postsurgical period and can be tested on people with linguistic or hearing impaired patients.

The strength of the **SLAN** is that the face pictograms sequence is understandable by ID groups, particularly the ones who are accustomed to its use in the usual activities. To optimize the use of the **EuroQol EQ-5D** questionnaire, it is also proposed to convert items related to quality of live into pictograms or short rephrasing questions to make easier to assess the discomfort for ID and PD people.

The limiting factor of SLAN is the fact that it contains only three verbal items associated to face pictogram. This point limits the possibility of the patient to express specifically his discomfort and particularly the ID persons. Some people are not accustomed with the use of an intensity scale based on a face pictogram sequence. The EuroQoL questionnaire was generally well understood except the section about '*Usual activities*'.

There was no specific item in the SLAN form for specific physical activities for people using wheelchair about assessing '*Ability to move*', knowing that this category is frequent among PD people. There is no item for the aspects such as the nature and location of pain or discomfort in the two questionnaires studied. Boland and al recommend some adaptation of these questionnaires to be efficiently applied with people living with disabilities.

The tool, **ODEON**, encompasses all the quantitative and the qualitative dimensions of pain and pain relief associated to ophthalmic pathologies and ophthalmic surgery. The Panel of 33 icon-items in the fifth section integrated to the qualitative and the quantitative items and scales of ODEON give a specific and accurate description of pain in these pathologies. According to this review, ODEON is the unique iconic form focused on assessing pain linked to ophthalmic pathologies.

A limiting criterion is that the number of the section and the items is high. Consequently, the time of completion is long and in some cases, the patient may not be able to complete the form to the end. Likewise, the tool is under the validation process and needs further studies and some adaptations.

The strong point to the questionnaire **Pictogram of pain qualities for Down Syndromes adults** is that in the study, the authors considered selecting criteria as functioning parameters, estimated mental age, receptive language comprehension, verbal memory and other psychological, communicational and social skills parameters. Only people with acceptable values were eligible. Then tests on the comprehension of the three series of self-reporting pain tools based on iconic approach have been performed on admitted patients.

The test of the ability to arrange the serie of 3 icons assessing the pain intensity in a growing order is a capital methodological aspect to be checked among DS people. The limited expressive language among DS patients is a point that favored the election and the use of these series of tool. The number of items by serie is well adapted to DS people. However, it is difficult to discriminate between the real ability of use and recognizing the different meaning of each icon of the pictogram and the familiarity with iconic concepts in the developmental environment of the DS people.

The different icons referring to different quality of pain are located in the same site of the body in the pictogram and the expression of the face is equal. This representation may be confusing for DS people. Asking the patients to associate a quality icon from a serie of four icons to a site in a body diagram by the DS people may be clearer and give an additional information about the localization of pain.

A strong element for **COOP/WONCA** is the accuracy, simplicity and clarity of the graphic illustration of the items. The icon-items are well illustrating the aspect required and the changes in the state of the patient. Each item is introduced first by a verbal question and illustrated by a serie of 5 icon-items representing the different intensity of discomfort. Each icon-item is associated to an expression of some words to explain the difference between each icon in the same serie.

The limit of this tool is that all the items concern specifically the degree of changes in discomfort, only one item concerns pain. There are no specific illustrations about the quality and location of pain. The data showed that the adapted and translated form has an appropriate adequacy and feasibility among Moroccan and Turkish immigrants in Netherlands.

The usual body diagrams developed in other tools do not consider the specificity of pain related to breast cancer. Conversely, **Questionnaire associated to pictogram of body map for breast cancer**, contains a detailed map of the body specifically surrounding the areas of the breast front and back with geometric landmarks.

The other strong point is the use of a program to process the data about the localization of the pain. This makes the analysis easier and more specific than with classic methods used in other tools with a body diagram.

The tool allows also distinguishing between areas with high levels of pain and areas with low levels. It permits to have an idea about the intensity on the specific localization of pain on the body in order to guide the treatment.

Data processing requires a long and complicated processing way and programs. This is a limiting factor for routine use of this tool in some clinical contexts with modest financial and technological means.
Additionally, the use of the tablets is recent and it is more commonly used in developed countries than in developing countries.

The tool does not allow assessing pain intensity directly, or pain quality description. However, the patients could be asked to mark the intensity of pain on each pain area shadowed.

The **Pictograms to assess gastric discomfort** contains a large panel of colored iconic items which enhances the accuracy of the description of gastric discomfort quality. The icons have their associated verbal descriptors which has an additive value for the understanding of each symptom. The intensity and the frequency of pain or discomfort can be described faithfully with the 2 serial scales.

However, the cognitive evaluation of the pictograms has been realized with a limited number of participants. The conclusion about the understanding of the items of the tool could be more affirmative with a sample with more participants.

The use of these pictograms accompanied with verbal descriptors improves the concordance of the data of the evaluation of dyspepsia symptoms compared between patients and physicians. This concordance is not absolute and verified for all the items of the tool.

The **Iconic Interdisciplinary tool to assess pain and discomfort** considers at the same time physical, psychological and social dimensions of pain. A several number of iconic-items are extracted from 'Clipard' images. The set of these images or icons illustrates the body functions and the daily activities. The form is adapted in the context of language barriers or difficulties due to cultural reasons or diseases. This tool can be used in other situations such as the evaluation of the effectiveness of rehabilitation programs in rheumatology, traumatology or other clinical context.
A limiting factor is that the population studied is constituted mostly of men. This fact is limiting the transferability of the findings to the target population. In the same time, the patients have been enrolled in the early stages of installation of chronic pain or potential chronic pain. So the results may be underestimated because the patients managed to keep their job and are careful about the judgment of the physicians about their incapacity.

5. CONCLUSION

According to the results of this review, we have one class of iconic numeric-based tools. The iconic paper-based tools are subdivided into 2 further classes. The second one covers tools assessing pain or discomfort in general contexts and the third class is dedicated to assess pain in specific diseases or syndromes in distinct clinical contexts.

According to the authors, the numeric tools follows a fast extension using different numeric support as iphone, tablets and laptop applying distinct software [26-30]. This class of numeric iconic-based forms as IPAT, Pain-QuILT, Pain-QuILT-2 and the pictogram for breast cancer, allows a continuous and timely assessing and a secure recording of pain profiles on a numeric database of the profiles with a description of the quality, the intensity and the localization of pain and discomfort.
The second class is dedicated to a holistic approach of describing the discomfort, the general state or the well-being. It contains COOP/WONCA charts, SLAN and the Interdisciplinary tool to assess pain in chronic pain groups or groups with intensive physical activities.

The third class allows a specific and accurate description of pain and discomfort in distinct clinical context as ODEON in ophthalmic clinical context, Questionnaire for pain quality for Down Syndrome people and the Pictogram for gastric discomfort. Pictorrino is specific to communicate basic and physiologic needs in a transitory situation of inability to communicate verbally due to surgery in laryngectomized people. The required accuracy in this special class of tool and their step of development need further studies for a full validation. ODEON and Pictorrino require an adaptation of the verbal descriptors associated to the icons to English or other languages.
The Iconic tools studied in this review can be applied in Morocco to assessing pain and discomfort in cancer or specific diseases after some adaptations considering local cultural context.

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