

Adoption PDA to Assess Oral Impacts on the Daily Performance of elderly Thais

การนำคอมพิวเตอร์แบบพกพามาสำรวจผลกระทบสุขภาพช่องปากของผู้สูงอายุไทย

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Abstract

The aging population in Thailand has implications for dental care and the paradigm shift in technology will allow dental professional to provide quality treatment outcomes. This research developed an innovative Personal Digital Assistant (PDA) assessment instrument to assess Oral Impacts on the Daily Performance (OIDP) of elderly Thais to help multidisciplinary professionals to improve information being offered The professionals expressed the opinion that the instrument is easy to use, portable and easy to manage. The data produced by this instrument are readily analyzed and consistent with traditional measurement instruments

Key words: geriatric dental healthcare information, Personal Digital Assistants, oral Impact Daily Performance

บทคัดย่อ

ผู้สูงอายุในประเทศไทยมีจำนวนเพิ่มมากขึ้นและมีผลกระทบต่อการใช้บริการทางด้านทันตกรรมเป็นอย่างมาก การเปลี่ยนแปลงทางด้านเทคโนโลยีก็เป็นทางเลือกหนึ่งที่จะช่วยเสริมศักยภาพของการให้บริการแก่บุคคลกลุ่มนี้ งานวิจัยนี้ได้ทำการพัฒนาคอมพิวเตอร์แบบพกพาเป็นนวัตกรรมเทคโนโลยีทางเลือกสำหรับช่วยประเมินผลกระทบสุขภาพช่องปากของผู้สูงอายุซึ่งข้อมูลที่ได้จะช่วยให้ทันตแพทย์และสหวิชาชีพได้รับประโยชน์ของการใช้ข้อมูลในการดูแลผู้สูงอายุร่วมกัน ผลการศึกษาในครั้งนี้พบว่าทันตแพทย์และสหวิชาชีพผู้ใช้นวัตกรรมที่คณะผู้ดำเนินการวิจัยพัฒนาขึ้นมา ให้การยอมรับว่าง่ายต่อการใช้ เหมาะสมต่อการใช้งานและง่ายต่อการบริหารและการจัดการ ข้อมูลที่ได้สามารถประมวลผลออกมาได้ทันที และไม่แตกต่างต่อการประเมินผลกระทบสุขภาพช่องปากด้วยวิธีเดิม

คำไรห้ส: สารสนเทศทางทันตกรรมผู้สูงอายุ คอมพิวเตอร์แบบพกพา ผลกระทบของสุขภาพช่องปากต่อสมรรถภาพในชีวิตประจำวัน

Introduction

The advent and proliferation of information technology has created a virtual environment within which a powerful set of ideas is emerging around the notion of an “online community”. This online community interacts using ever-improving technology, one of the latest example being the Personal Digital Assistant (PDA). In the professional area of geriatric dentistry the use of the PDA to assess the Oral Impacts on Daily Performance (OIDP) of elderly Thai as part of the geriatric oral rehabilitation process has the potential to lead to improvement in the quality of geriatric dental care. The adoption of this innovative new technology will allow dental professionals and multidisciplinary healthcare professionals to employ a range of assessment components to help them in clinical decision-making to improve treatment outcomes. At present the integration of the PDA into dental professional practice is still in its early stages as the PDA is a relatively new tool in the clinical environment. The integration of the PDA into clinical dental practice promises to transform the geriatric oral rehabilitation therapeutic process and greatly improve the quality of life of the elderly. This transformation will be particularly noticeable in developing countries when the infrastructure is put in place to fully realize the potential of this new technology. While there seems to be a vast difference between developed and developing countries in the use being made of the PDA for clinical assessment, both before and after oral rehabilitative treatment, many individual professional caregivers, even in developed countries, are still finding their way with this new type of assessment instrument. Furthermore, the move towards the integration of information technology into complex clinical settings presents major challenges to professionals in all countries. Despite

these challenges, the PDA offers so much in the way of improvement to the management of clinical information, that its possibilities will stimulate geriatric dental healthcare professionals to incorporate it into their treatment process so as to benefit all dimensions of geriatric oral rehabilitation.

Research Background

Early in the year 2005, the ‘Thai Royal Denture Project’ was launched in Thailand to celebrate the King’s eightieth birthday anniversary. The Minister of Public Health was the chairman of the project and the project incorporated both government and private sectors. Such bodies as the Thai Dental Council, the Thai Dental Association, the university Faculty of Dentistry, the Defense Department and other allied health networks joined forces to serve this project. The project targeted elderly Thais who needed full-mouth oral rehabilitation, and it was estimated that about 80,000 people would require complete dentures or temporary denture rehabilitation within the three-year time frame of this operation (2005 to 2007). This project established the oral rehabilitation of elderly Thai as being of major national significance. The problems suffered by elderly Thais who lose their teeth impact on their biological functioning, on psychological aspects of their lives, and are related to their current ageing condition⁽¹⁻³⁾. Results of the 5th National Oral Health Survey, Thailand 2000⁽⁴⁾ how that the pattern of oral health in the elderly Thai population has changed constantly over the past 20 years. There has been a general decline in edentulism and a substantial base of evidence indicates there has been an increase in the number of remaining functional teeth in the elderly Thai population. But despite these positive indications of an improvement in the dental condition of the aged, other

associated factors are a cause for concern. Juntavee (1999)⁽⁵⁾ has argued that empowering the community to realize the importance of their oral health through the provision of information and collaborative support from dental health professionals would enable its members to make decisions to bring about appropriate changes.

Geriatric oral rehabilitative treatment requires caring interaction between patients and dental professionals, with cooperation also from home carers and the family⁽⁶⁾. This treatment places increased demands on the geriatric patient and the family for technical, emotional and social involvement. Many Thai families are involved in numerous daily activities related to socio-economic survival, and in addition, family members might be physically or psychosocially compromised and thus unable to assume the role of primary home carer. Furthermore, many have a low perceived need for better oral health⁽⁷⁻¹⁰⁾. With the availability of technology, especially the PDA, many researchers are adopting these technologies to assist and support geriatric care. The full potential of technology to enhance geriatric dental care is yet to be appreciated by dental professionals. If dental professionals did appreciate this potential it would enable them to embrace it and use it as a catalyst for change in their geriatric dental practice. Thus, this research developed an innovative PDA assessment instrument to assess oral impacts on daily performance and provide information to guide oral rehabilitation treatment procedures to restore the oral health of the geriatric patient. This instrument was designed to help dental professionals in elderly care to improve the level of dental care services being offered.

Method

This study developed an innovative PDA-based assessment instrument to assess the level of

oral impacts on the performance of daily activities by elderly Thais who joined the grand opening ceremony of the Royal Denture Project in Chiang Mai province on February 22, 2006. This innovative assessment instrument adopted a widely-used socio-dental indicator, the *Oral Impacts on Daily Performance* (OIDP) developed by Adulyanon (1996)⁽¹¹⁾ which assesses the level of impact the oral condition of patients has on their performance of daily activities. Impacts are assessed under three main categories: physical, psychological and social. Eight impacts taken from the OIDP were used in this study.

An innovative PDA-based assessment instrument was distributed to undergraduate students and dental staff members for them to use in assessing the level of oral impacts on elderly Thais who participated in the Royal Denture Project opening ceremony. The period for which impact levels were assessed was the 6 months prior to their participation in the opening ceremony. The assessment data were analysed, using the Statistical Package for Social Sciences (SPSS) version 13 to produce simple descriptive statistics.

Result and Discussion

205 participants, aged from 60 to 84 years, were assessed by the PDA-based assessment instrument developed by the researcher, and the percentages of the participants experiencing impacts are shown in Table 1 and 2:

Of the 205 participants, 100% of participants reported at least one daily performance impacted by the oral condition during the past 6 months, and daily performances of over half (55.61%) were affected by seven or eight oral impacts. This result indicates that the oral condition of most of the participants had a significant over-all impact on a range of daily performances. The category of daily performance impacted most strongly by the oral condition was the psychological aspects: smiling,

Table 1 Percentage of participants reporting impacts from their oral condition on different daily performances

Daily performances	Percentage (n=205)	
	Affected	Not affected
Physical performances		
1. Eating	45.36	54.63
2. Cleaning teeth	85.85	14.14
3. Speaking	77.56	22.43
4. Perform physical activities	80.98	19.02
Psychological performances		
5. Sleeping and relaxing	81.46	18.53
6. Smiling	93.66	6.34
7. Emotional stability	87.80	12.20
Social performance		
8. Contact with people	81.95	18.05

laughing and showing teeth without embarrassment. An average of 87.64% of participants reported suffering impacts on psychological performances. An average of 72.44% of participants reported impacts on physical performances, while 81.95% reported impacts on social performance. It is of interest to note that less than half (45.36%) of the participants reported that their oral condition impacted on their eating performance.

These data are consistent with those reported by Srisilapanan and Sheiham (2001)⁽¹⁾, so it is reasonable to conclude that the PDA is producing valid and reliable results. Furthermore, those using the PDAs reported that they were very easy to use because of their light weight and portability, and because the software was very user-friendly.

Conclusion

The results of this study indicate that the Personal Digital Assistant (PDA) is a valuable tool in assessing Oral Impacts on Daily Performance of elderly Thais. The personnel who used the PDAs

Table 2 Number and percentage of participants whose oral condition impacted from 1 to 8 daily performances:

Number of performances impacted by oral condition:	Number of Participants	% of participants
Oral condition impacts only one daily performance	1	0.49%
Oral condition impacts two daily performances	2	0.98%
Oral condition impacts three daily performances	11	5.37%
Oral condition impacts four daily performances	17	8.29%
Oral condition impacts five daily performances	25	12.2%
Oral condition impacts six daily performances	35	17.07%
Oral condition impacts seven daily performances	52	25.37%
Oral condition impacts all eight daily performances	62	30.24%

reported that they were easy to use, and they are very portable and easy to manage. The data produced by this instrument are readily analysed and are consistent with those produced by traditional measuring instruments. It is therefore concluded that this form of technology is a valuable means of providing more efficient assessment to aid in improved rehabilitative dental treatment for geriatric patients.

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