

## **A Design of the m-Health Application for Art Therapy**

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**ABSTRACT :**Due to a diversified society, many of modern people are under stress and anxiety which cause mental illnesses. Moreover, the social costs of psychotherapy and solution is so high that it cannot be limited to a problem for individuals realistically. In this paper, we implement an m-Health application that can provide preemptive art therapy services to reduce social costs and medical expenses. The implementation of the m-Health application for art therapy has an advantage that social consideration class (the elderly, post-traumatic stress disorder, etc.) can get treatment without leaving records by receiving medical welfare service of art therapy in conjunction with professional therapist. Consultation clients are treated through the visit of a professional therapist and the recorded videos are transmitted to a professional psychotherapy center server if clients agree to shooting and recording of the processes. Based on the outcomes derived from the consultation processes, we aim to build a database of the medical records and the new treatment program and apply it to m-Health. Therefore, we expect to establish the criteria of objectivity, quantify, accuracy and the automaticity of psychological treatment analysis.

**KEYWORDS:**m-Health application, Art therapy, Psychotherapy, Mental illnesses, Therapist

### **I. INTRODUCTION**

Mobile health (m-Health) is a component of electronic health (e-Health). To date, no standardized definition of m-Health has been established. For the purposes of the survey, the Global Observatory for e-Health (GOe) defined m-Health or mobile health as medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices. m-Health involves the use and capitalization on a mobile phone's core utility of voice and short messaging service (SMS) as well as more complex functionalities and applications including general packet radio service (GPRS), third and fourth generation mobile telecommunications (3G and 4G systems), global positioning system (GPS) and Bluetooth technology [1].

m-Health applications offer a new and fast way of collecting health related information without the use of full fledge workstations or laptops. With a small and yet powerful smartphone or mobile device such as an iPad or Android based tablet, information can quickly be exchange and even connect patient monitoring devices to practitioners [2].

There are several categories in which mobile Applications can be categorized into while there will most likely be a lot more out there, The following contents are will focus on the main parent categories and provide examples in each.

- Applications for Clinical or assistance in diagnosis: Symptom checkers, PHR access, Digital imaging (MRI/X-Raying viewing abilities, Electronic chart review, Lab results review
- Applications for remote monitoring: LifeScan for patients with diabetes, Remote heart monitoring, ECG viewer, Oxygen level remote check, Telehealth services
- Applications for reminders and alters: Prescription management, Appointment reminders
- Applications for references: ICD-9/10 reference guide, E&M coding, Specialized medical reference material
- Applications for healthy living: Pregnancy and baby development, Diet assistance, Exercise and fitness, Psychotherapy, Healthy eating
- Applications productivity: Remote dictation, Surgery Scheduling, Interoffice communication

The current major accidents due to the diversification of human society and the natural disasters constantly occur. Accident provides to the human stress, anxiety and fear. And stress, anxiety and fear leads to the mental disorder. Therefore, the social costs for the treatment and resolution of mental illness is increasing. The reduction of social costs and medical expenses for the treatment and resolution of mental illness at this time was felt to be a need for a pre-emptive treatment services.

In this paper, we design and implement m-Health applications that provide pre-emptive health care and welfare services for people (the elderly, post-traumatic stress disorder, etc.) in need of social care. Pre-emptive treatment services for the implementation of m-Health applications, including psychotherapy with art. Psychology courses using art is built into the video database. By passing the video database to be built to a professional therapist counseling and treatment process is performed. Therefore reduce the social costs which are intended to prevent a more serious accident due to a mental disorder such as stress, anxiety, fear.

## **II. THE DEFINITION OF ART THERAPY**

Art therapy is a form of psychotherapy that uses art media as its primary mode of communication. It is practised by qualified, registered Art Therapists who work with children, young people, adults and the elderly. Clients who can use art therapy may have a wide range of difficulties, disabilities or diagnoses. These include, for example, emotional, behavioral or mental health problems, learning or physical disabilities, life-limiting conditions, brain-injury or neurological conditions and physical illness. Art therapy may be provided for groups, or for individuals, depending on clients' needs. It is not a recreational activity or an art lesson, although the sessions can be enjoyable. Clients do not need to have any previous experience or expertise in art [3].

Art therapy is a relatively new human service profession in the field of psychotherapy. It is a profession that is described by the American Art Therapy Association as the therapeutic use of art making within a professional relationship, by people who experience illness, trauma or challenges in living and by people who seek personal development. Through creating art and reflecting on the art process and product people can experience increased awareness of self and others, can better cope with distressing symptoms, stress, and traumatic experiences, enhance cognitive abilities and enjoy the life-enhancing process of making art. The art therapist has an understanding of the art experience from a psychological and aesthetic perspective and assists clients in a building internal sense of self-awareness through their artwork and personal reactions to the work.

Art therapy practice has a knowledge base grounded in theories of personality, human development, psychology, family systems and art education. Because art therapists are trained both in art and therapy, they are knowledgeable about human development, psychological theories, clinical practice, the healing potential of art and multicultural traditional uses of art. Because creativity and psychotherapy are both about change and transformation they can enhance one another's effectiveness.

In the last decade there has been a revitalization of art therapy as an integral part of expanding social services and a new focus on the healing aspects of expressive arts. Art therapists can be found working collaboratively with allied health professionals in palliative care programs, in cancer centers, in complementary care program, in prisons, in trauma relief teams and personal growth classes. Art therapists are employed in school systems to address the needs of children with physical and learning disabilities.

## **III. RESEARCH ON ART THERAPY**

The application of new techniques in brain imaging has expanded the understanding of the different functions and structures of the brain involved in information processing. The basic level of interventions with art media is through sensory stimulation. Visual feature recognition and spatial placement are processed by the ventral and dorsal branches of the visual information processing system. Mood-state drawings echo the differences in the activation of different brain areas in emotional states. The cognitive and symbolic aspects of memories can be explored through the activation of their sensory components [4].

The purpose of [5] was to examine the effectiveness of art therapy content program as a targeted intervention for reducing problem behaviors of children with adaptive behavior problems in their classroom. Specifically, [5] was Interested in how interventions based on mother-child relationship changes for the children's school adjustments. The participants in [5] were three first grade elementary school children and their 3 mothers, total in 6 participants. A multiple baseline across participants was used to evaluate the effects of increasing mother's positive verbal reinforcement and the children's positive behaviors. Results demonstrated the effectiveness of the art therapy content program in reducing problem behaviors and improving the pro-social incorporating mother-child interactional relationships. Also the results confirm the importance of understanding and providing a good family relationship for the children with problem behaviors. Implications and future directions are provided.

[6] shows the process that a child with Separation Anxiety Disorder-who can't come and go to school by themselves, and can't fit into school life find his emotional stability. Also, this study proves that art therapy helped the child with Separation Anxiety Disorder-who called himself Green Bus-stabilize his emotions.

Conducting the Anxiety Measure Test (TAIC and SAIC) and observing the changes in his pictures showed improvement in his emotional development. The major study results were as follows: First, the study shows the index of the Anxiety Test was lower than the one of the formal one. It proves that art therapy is effective in stabilizing emotions of children with Separation Anxiety Disorder. Second, art therapy has an effect on emotional stability through observing pictures created by children with Separation Anxiety Disorder. Over time, they showed various positive changes. Third, the positive effect of art therapy was proven by the changes of children's problematic behaviors.

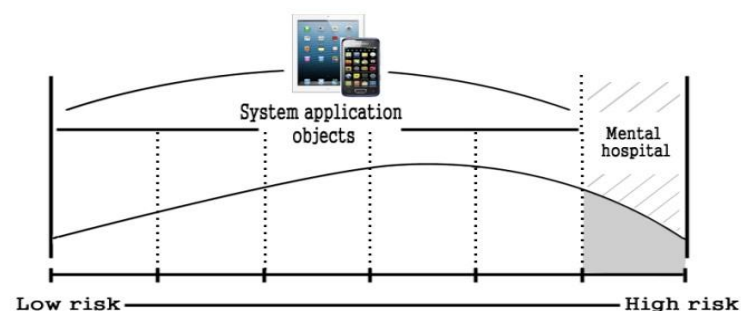
Humans are developed by interacting with the fosterer-called mother-from the beginning of their birth. Anxiety caused by improper interaction with the fosterer must be cured, because it can make children have many problematic behaviors when they grow up. Also they may have improper social relationships such as society distrust after adolescence. In addition it can be the main cause of various mental diseases. In particular, art therapy has an effect on mitigating the potential tension and anxiety of children who are nonverbal by making them express their unconscious conflict and impulse control.

#### **IV. DESIGN OF M-HEALTH MOBILE APPLICATION FOR SYCHOTHERAPY**

Art therapy can improve the adaptability through the diagnosis and treatment of psychological subjects suffering from mental and physical problems as a combination of psychotherapy and art are for the purpose of psychological stability.

In particular, this could not express their feelings and experiences as language or behavior is targeted to people who can't adapt to social life. Utilizing the arts for people who can't adapt to social life, to express themselves and to help ensure that improved social adaptability. Also, art therapy for children and the elderly, as well as useful for young people and adults who have a negative attitude in counseling and psychotherapy, so m-Healthy art therapy applications anytime, anywhere, anyone can easily use.

In this paper, the application is designed by the KFD (Kinetic Family Drawing) [7] test has been used in art therapy is classified as low-risk and high-risk. And high-risk groups are designed to be referred to the mental hospital, as shown in the Fig.1.



**Fig.1. Scope of m-Health application for the art therapy**

If you do not fall into the high risk group, in recognition of the range that can be applied to applications built in this paper, configured to experience a pre-emptive treatment services using the arts.

The m-Health application is designed to target underprivileged groups. The underprivileged group means a social care hierarchy under stress in the elderly, post-traumatic stress disorder, or school violence, including sexual violence.

The whole system is built on technologies such as wired and wireless networks, a database encryption, distributed processing, Java programming is applied. The underprivileged groups, counselors and therapists are connected to interconnected to each other within the system. However, depending on the application to be provided to the respective systems are different from each other is applied.

Fig.2 ~ Fig.4 are represented by separating the m-Health System for treatment of art as a server system, counselors system and therapists system.



Fig. 2. Server systems of m-Health application for art therapy

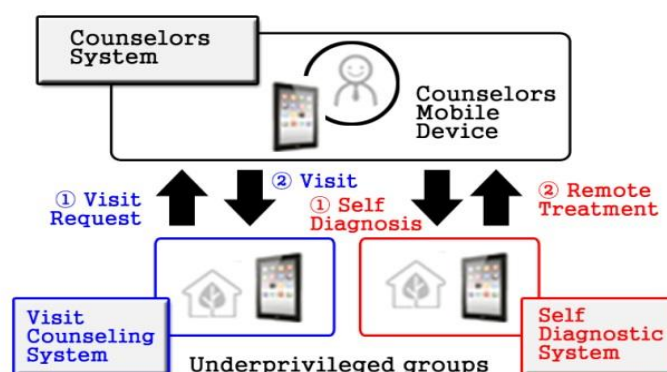


Fig. 3. Counselors systems of m-Health application for art therapy

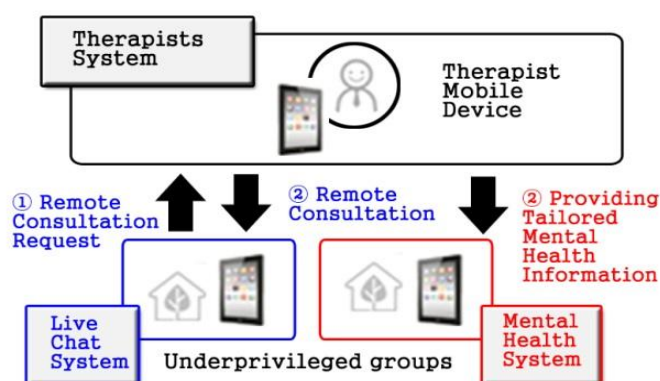


Fig. 4. Therapists systems of m-Health application for art therapy

m-Health applications require the multimedia elements based on the mobile device and the Internet. Treat subjects that do not belong to high risk groups will receive treatment while communicating with the therapist. At this time, the treatment of subjects may receive treatment from a therapist through the application using the mobile device. Treatment results obtained through the video analysis should establish a database to be applied to future psychological treatment program.

The therapist means the therapist using art and is responsible for services to treat underprivileged groups via the Internet and mobile applications. The therapist sends the picture drawn by the underprivileged

group to build a database server. And the pictures sent back from the server to receive counseling. Therapist stores the process goes group is treated with m - Health Systems as a database.

## V. EXPERIMENTAL RESULTS

Counselors met with participant once a week for 12 weeks to a qualitative assessment of the proposed application. Participant is a girl who has experienced sexual abuse of a 9-year-old. The participant was required treatment period of three months. And the art therapy program was performed 12 times for psychological treatment of participants.

Table 1 shows the result of the preliminary inspection and post-inspection of the CPRS(Conners Parents Rating Scale)[8]. Participant's aggression, attention deficit hyperactivity, learning problems, impulsivity, anxiety levels are reduced in post-inspection.

**Table1.Variation in the preliminary inspection and the post-inspection by Conners Parents Rating Scale**

Check factors	The preliminary inspection levels	The post-inspection levels	Variation levels
Aggression	29	12	-17
Attention deficit hyperactivity	13	6	-7
Learning problems	10	6	-4
Impulsivity	14	6	-8
physical problems	22	11	-11
Anxiety	26	14	-12
The Sum of check factors	114	55	-59

Table2 shows the result of the preliminaryinspection and post-inspection value for the self-esteem. As a result, the overall self-respect was improved in 78 (48.8%) 120 (75.0%).

**Table2.Variation in the preliminary inspection and the post-inspection by self-esteem**

Check factors	The preliminary inspection levels	The post-inspection levels	Variation levels
Self Esteem	17	29	+12
Social self-esteem	24	26	+2
Self-esteem at home	17	38	+21
Self-esteem at school	20	27	+7
The Sum of check factors	78	120	+42

Art therapy has a role to improve the self-esteem of sexual child victims. The proposed art therapy application can reduce the stress of the sexual problem post traumatic damage children. The proposed application is to be able to widen the field of the m-Health.

## VI. CONCLUSION

The proposed application is expected to be effective as follows:

- It can be expected to improve the mental health technology and may be the technical basis on which to establish the criteria of the different health services.

- The proposed application is to be able to expand the range of m-Health field including psychotherapy. In addition, it is possible to reduce the cost of psychotherapy.

- Counseling is done through a combination of mobile and IT technology. Therefore, there is an advantage no space limitations for consultation.

- By conducting pre-emptive treatment of socially marginalized people can prevent greater side effects. In addition, it is possible to perform the support and management of the social disadvantaged effectively.

- The proposed m-Health application may build a database for analysis psychotherapy. Therefore, we expect to establish the criteria of objectivity, quantify, accuracy and the automaticity of psychological treatment analysis.

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