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Special Issue on Anxiety Problems in Children

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The Hong Kong Society of Child Neurology and Developmental Paediatrics

EDITOR'S NOTES for the February 2017 Issue

Anxiety Problems in Children

Dr. Florence MY LEE

The current issue of Brainchild is devoted to “Anxiety Problems in Children” with contributions from colleagues working in the different sectors, from primary to tertiary care, and community service in our local setting. Thanks to all the contributors from the various sectors and their respective teams for their effort, we hope to give the audience a general update and a glimpse of the local services.

Anxiety problems are common in children and adolescence, but often neglected and under recognized in our clinical practice. The underlying etiology is multi-factorial and anxiety problems often have early signs and symptoms in childhood. As anxiety problems are highly comorbid with another type of anxiety problems, depression, other psychiatric or neurodevelopmental problems, we need to be aware of the comorbidities and manage accordingly. There is good evidence that anxiety problems are treatable and with early identification and intervention, children will overcome their difficulties with care and support. Child and adolescent mental health problems need to be understood in their broader family, school and social context, and promoting the mental health of children and adolescents requires combined and sustained efforts of all sectors. With the concerted efforts of all parties, our children will grow with better health and lead a prosperous life.

I wish you all reading pleasure and best of health!



Dr. Florence MY LEE

Editor-in-Chief, *The Brainchild*

Vice President, The HK Society of Child Neurology & Developmental Paediatrics

10th February 2017.

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Anxiety Disorders in Children and Adolescents- Pharmacological Aspects

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Chief of Service

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Anxiety is a normal response to various stressors in our environment by means of the all familiar ‘flight or fight responses’, and is of survival and evolutionary importance. Anxiety becomes a disorder when it is intense & distressing, persistent and impairing. Anxiety disorders are the most common mental health diagnoses in the youth yet it is not uncommon that they are underdiagnosed or misjudged. Prevalence rates for having at least one childhood anxiety disorder vary from 6% to 20% over several large epidemiological studies¹. Anxiety disorders should be treated promptly as chronic stress mediators may have significant impact on brain development² and functional impairment linked to anxiety symptoms may prevent youth from accessing normative experiences that are highly important for their social, emotional and cognitive development and carry risks for subsequent development of other psychiatric comorbidities into adulthood, for example, young people with anxiety disorders are three times more likely to have anxiety and depression in adult life compared to non-anxious youth³. In children, the more obvious clinical presentation with distress and avoidance may be masked by prominent behavioural symptoms (e.g. irritability and angry outbursts linked to avoidance). Youth diagnosed with one anxiety disorder, nearly half will meet criteria for other internalizing disorders, including depression, and externalizing disorders like Attention Deficit / Hyperactivity Disorder (ADHD) or Oppositional Defiant Disorder. Attention to these comorbidities is essential for comprehensive treatment as, in general, presence of comorbidities may complicate the clinical pictures and the diagnostic formulation, pointing generally to more severe impairments and less satisfactory response to treatment. Therefore, the assessment and treatment of anxiety disorders in children needs to be undertaken by clinicians who can discriminate normal, developmentally appropriate worries, fears and shyness from anxiety disorders, and appreciate developmental variations in presentation of symptoms.

Anxiety disorders appear to be caused by an interaction of bio-psychosocial factors, including genetic vulnerability, which interact with situations, stress, or trauma to produce clinical significant syndromes⁴. The amygdale appears key in modulating fear and anxiety. Patients with anxiety disorders often show heightened amygdala response to anxiety cues. The amygdale and other limbic system structures are connected to the prefrontal cortex regions. Hyper-responsiveness of the amygdale may relate to reduced activation thresholds when responding to perceived social threat. Prefrontal- limbic activation abnormalities have been shown to reverse with clinical response to psychological or pharmacological interventions⁵.

The discussion that follows covered the anxiety disorders as described in DSM-5⁶. It

should be note that Obsessive-compulsive disorder (OCD) and posttraumatic stress disorder are no longer considered anxiety disorders as they were in the previous version of the DSM.

Treatment of anxiety disorders

Guidelines for the treatment of anxiety disorders in children and adolescents are available in the UK and the US^{7,8}. In general, both recommended use of psychoeducation and psychological treatment especially cognitive behavior therapy (CBT) as first line treatments. Drug treatment is endorsed for moderate to severe anxiety symptoms that may be started concurrently with psychotherapy, or may be initiated before starting psychotherapy to reduce the impairing nature of severe symptoms or when psychotherapy leads only to partial response. However, in ‘real world’ clinic settings, psychotherapeutic treatments may not be readily available due to long waiting time or may be difficult to carry out due to motivational factor of clients or even their families. As such, a pragmatic approach should always be adopted in formulating treatment plan, taking into account clinical factors,

When considering choice of pharmacological agents, selection should be guided by the evidence base and clinical guidelines, with special consideration for side effect profile and unique clinical characteristics to optimize care⁹. A limited number of randomized control trials (RCTs) have evaluated anti-anxiety agents in children and adolescents. Despite the much greater prevalence of non-OCD anxiety disorders, studies are more limited in children and adolescents. Furthermore, subtypes are often mixed within treatment arms, limiting the ability to compare response to treatment by specific disorder. Though to date no medication have been approved by the US Food and Drug Administration for treatment of non-OCD anxiety with youth yet positive results have been demonstrated for multiple agents in the treatment of anxiety in youth particularly medication targeting serotonin reuptake. A meta-analysis of RCTs examining the tolerability and efficacy of pharmacotherapy in youth found that Selective Serotonin Reuptake Inhibitors (SSRIs) and Selective Serotonin Norepinephrine Reuptake Inhibitors (SNRIs) showed clear benefit with an overall response rate almost double that of placebo¹⁰. The largest RCT of non-OCD anxiety disorders to date is the Childhood Anxiety Multimodal Study (CAMS), which evaluated treatment of separation anxiety disorder, generalized anxiety disorder (GAD) and social phobia (SoP)¹¹. Treatment groups included sertraline only, CBT only, combination treatment, or placebo. All three active treatments were superior to placebo (24%), with the highest response in the combined condition. These findings again suggest that, while monotherapy with either medication or psychotherapy alone can be effective for treating anxiety disorders, a multimodal approach is more likely to be successful. Other agents with demonstrated efficacy for youth with anxiety include fluvoxamine^{12,13} and fluoxetine¹⁴. An open label follow-up study showed that 94% of the fluvoxamine responders exhibited a sustained benefit after 6 months¹⁴. Furthermore, non-responders to initial fluvoxamine treatment still exhibited a high rate of response to a subsequent open-label trial using alternative SSRIs despite an initial lack of response to one agent. Fewer studies have examined selective cohorts with specific non-OCD anxiety diagnoses. An RCT examining paroxetine treatment in youth specifically with SoP showed

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efficacy over placebo¹⁵. In addition, a small RCT of youth with GAD found a robust response to sertraline after 9 weeks, in contrast to a low placebo response¹⁶. To date, no RCTs have examined medication effects in youth with panic disorder. SNRIs have also been tested in short term RCTs in youth with anxiety disorders. Specifically, venlafaxine XR was examined in two 8-week RCT in children with GAD^{17,18}. Despite insignificant improvement on a primary measure in one of the trials, pooled result revealed significantly greater response in the active treatment group compared with placebos¹⁷. Another 16-week RCT of venlafaxine XR in children with social anxiety showed significant benefit beyond placebo¹⁸. However, studies of venlafaxine in children indicated a risk for elevated blood pressure, decreased growth rate, and increased suicidal ideation.

Safety concerns with antidepressants

Initially identified in drug trials related to SSRIs in 2004, antidepressant treatment has been associated with an increased risk of suicidal thoughts and acts, particularly in adolescents and young adults, leading to the recommendation that patients should be warned of this potential adverse effect during the early weeks of treatment and the development of a monitoring strategy to make sure that patients can be assessed in a timely manner if such condition emerges, and patient information on how to seek help^{10,19,20}. In the US, all antidepressants carry a black-box warning from the FDA out of such concern, including those that are marketed for an indication other than depression (e.g. atomoxetine, an agent licensed only for treatment of ADHD and is not regarded as an antidepressant basically). It should be noted that²¹ although the relative risk may be elevated above placebo rate in some patient groups, the absolute risk remains very small and there was no completed suicide in studies reviewed. The most effective way to prevent suicidal thoughts and acts is to treat depression and antidepressant drugs are the most effective treatment currently available.

It is believed that the suicidal thoughts may be related to the activating effect of SSRIs, resulted in heightened experience of anxiety, increased emotional lability and impulsivity. Such state of agitation is most commonly seen within the initial titration period, it is, ideally, recommended that patient should be seen weekly for the first 4 weeks, than bi-weekly for the second 4 weeks, than monthly till the end of the 12th week.

In general, SSRIs are the medication of choice. Informed consent should be obtained from parents, and when possible, from the child or adolescent. Direct medication of medication use with patient is likely to improve compliance and engagement irrespective of age. Medication should be started at low rate and titrated at regular (e.g. weekly) intervals. Patient should be monitor for response and side effects. SSRIs are generally well tolerated during treatment for anxiety disorders in young people. However, side effects including gastrointestinal upset (e.g. nausea, vomiting, dyspepsia, abdominal pain, diarrhea, constipation), headache, increased motor activity, and insomnia may occur. Side effects tend to emerge earlier in the course of treatment or during dose adjustments, and may subside over days to weeks. It is important to communicate to patients and families that therapeutic

effect may take 3 to 6 weeks to be seen and maximum effect can take up to 12 to 16 weeks. If partial or non-response, there is need to consider accuracy of diagnosis, adequacy of medication trial and compliance of patient. To improve response, one may consider either adding CBT, changing medication (e.g. switch SSRIs or other classes), or combining medication (e.g. for comorbidities, to treat side-effects, to potentiate action). Even after symptom improvement or resolution, maintenance treatment should be continued for at least a year of stable improvement. A trial off-medication should be considered after a period of stable improvement, preferably at a period of low stress/demands. Discontinuation should also be considered if the medication is no longer working or the side effects are too severe. SSRIs should be tapered slowly to minimize withdrawal symptoms. Patient should be continuous monitored for recurrence of symptoms or relapse and, if deterioration is noted, promptly start medications.

Other agents

Benzodiazepine use is not supported by controlled trials in children and may lead to paradoxical disinhibition in some children. Yet open label studies indicate symptomatic benefit²². Moreover, benzodiazepine use is at times considered in clinical practice to ‘potentiate’ therapeutic effect during initial titration of SSRIs especially when symptoms are severe and for rapid tranquilization. It is important to discuss management issues, the potential for tolerance, risk of seizure from abrupt discontinuation and its short term use to reduce addiction potential with parents. Tricyclic antidepressants (TCAs) have also shown efficacy in several RCTs of youth with anxiety. RCTs examining treatment of SoP or school refusal have shown benefits of both imipramine^{23,24,25} and clomipramine^{26,27}. Although TCAs may be considered for patients who have intolerance to SSRIs, TCAs are generally less preferred because of the need of EEG monitoring due to potential for cardiac abnormalities, carry high risk of fatality in overdose, and have constipation and sedation as rather common side effects. Buspirone, a partial agonist of serotonin receptors that is no longer available in public psychiatric service of Hong Kong, has demonstrated effectiveness at 2 weeks with little adverse effect compared with placebo in a small placebo controlled study with anxiety disorders²⁸. Propanolol is another agent with some evidence of effectiveness in adults but lacks systematic data to support its use in children and adolescents. Pregabalin, an anti-epileptic that is increasingly popular for the treatment of generalized anxiety disorder in adults, has not been tested in youth.

Conclusion

Anxiety disorders are common in children and adolescents, and contribute to significant impairments in quality of life, often stemming from the associated behavioural avoidance that may seriously limit the youths’ negotiation of normative developmental tasks and result in far-reaching adverse effect on the youth’s developmental trajectories. While there are many more RCTs of drug treatment of anxiety disorders in adults as compared with youth, there is increasing evidence that carefully implemented treatment with medication improves symptoms in children and adolescents, particularly for those with moderate or severe

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symptoms. Best practice is for a combination of CBT in association with medications. SSRIs are the agent of first choice, with subsequent switch to an alternative SSRI if a first trial is not successful. Other medication options, including use of tricyclics antidepressants and benzodiazepines, may be considered but lack the evidence base and carry additional risks.

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Anxiety comorbidity in Autism Spectrum Disorder: Challenges in Diagnosis and Intervention

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Abstract

Anxiety comorbidity is commonly found in Autism Spectrum Disorder (ASD). This paper reviews the respective published findings on the prevalence and kind of anxiety disorders observed in individuals with ASD at different developmental stages. As a comorbidity with ASD, the challenges in making valid diagnosis and providing effective intervention are examined. The implications for future research and clinical practice are discussed.

Introduction

Psychiatric disorders are common in children and adolescents. In a study of 9 to 13 years old community sample, the 3-month prevalence rate was found to be 13%; and when the subjects were followed-up to 16 years old, the prevalence rate was 33%¹. Apart from the high prevalence rate, comorbidity is also found to be a common phenomenon in different child and adolescent psychiatric disorders and the respective prevalence was found to be in the range of 55%²; meaning one out of two diagnosed cases would have more than one psychiatric disorder. Thus in the study of any child and adolescent psychiatric disorders, the issue of comorbidity should be addressed and investigated. Without this, our understanding of the disorders would not be complete. In this paper, Autism Spectrum Disorder (ASD) and one of its most common comorbidity, anxiety disorders, would be discussed. Specifically, the challenges in diagnosing and intervening anxiety disorders in ASD would be examined.

Autism Spectrum Disorder

ASD is a childhood onset disorder often with lifelong implications. Since the first seminal paper on the disorder by Leo Kanner in 1943, our understanding of ASD has increased; however, there are still many myths about it waiting to be resolved³. In accordance with DSM-5, ASD is defined as a neurodevelopmental disorder which has significant deficits in reciprocal social interactions with repetitive and restricted behavior affecting normal functioning⁴. The prevalence rate of ASD has been found to be on the continuously increasing trend and the most recent estimate is 1/68⁵. The exact reasons underlying the increasing prevalence are unclear though loosening of the diagnostic boundary may be one of the major reasons.

The Comorbidity of ASD

Many individuals with ASD have comorbid psychiatric symptoms apart from their ASD diagnostic features. According to DSM-5, about 70% of the individuals with ASD may have one comorbid mental disorder and 40% may have two or more comorbid mental disorders^{4, 6} Among the comorbidity, the most frequent ones are intellectual impairment, structural language disorder, attention-deficit and hyperactivity disorder (ADHD) and anxiety disorders. Unlike in the past, DSM-5 allows a comorbid disorder (e.g. social anxiety disorder) to be listed with ASD as long as the former also meets the diagnostic criteria. This change acknowledges that the comorbid disorder of ASD may represent an expression of a distinct disorder apart from autism.

Anxiety Comorbidity in ASD

In ASD, anxiety disorders have been found to be highly prevalent. In a study of 10 to 14-year old children with ASD, anxiety disorders were found to be the most frequent comorbid disorder with a 3-month point prevalence of 41.9 %⁶. In a review paper entitled “Anxiety in children and adolescents with pervasive developmental disorder without mental retardation”, seven controlled studies were found between 1995 and 2010, and the results showed 42% of the subjects had comorbid anxiety disorders⁷. For young adults with ASD, along with a rising of comorbid major depressive disorder, anxiety disorders were found in the range of 50%⁸. In sum, the comorbidity of anxiety with ASD is highly prevalent across different developmental stages from childhood to adulthood with a prevalence rate of 40 to 50%.

The Prevalence of Different Anxiety Disorders at Different Developmental Stages

In a study of children with ASD (5-17 years old, mean age, 9.2 years), using a life time prevalence, 44 % of them were found to have comorbid anxiety disorders. Among them, 43% had specific phobia, 37.2 % obsessive compulsive disorder (OCD), 11.9 % separation anxiety disorder, 7.5% social phobia and 2.4% generalized anxiety disorder (GAD)⁹. In another study of children with ASD (10-14 years old), based on a 3-month prevalence, anxiety or phobic disorders were found to be of 41.9% with social anxiety topped at 29.2 %. The prevalence of other anxiety disorders were GAD (13.4%), panic disorder (10.1%), simple phobia (8.5%), OCD (8.2%), agoraphobia (7.9%) and separation anxiety (0.5%)⁶. In another study on young adults with ASD (mean age, 27 years old), 56% of the sample were found to have at least one comorbid anxiety disorder. Social anxiety disorder & GAD were found to be the most prevalent with 22% each and followed by agoraphobia (15%), panic disorder (13%) and OCD (7%)¹⁰. Though there might be different reasons (such as difference in sampling and methodology) contributing to the varied results, nonetheless, the manifestation of anxiety symptoms among individuals with ASD seems to vary at different developmental stages. Simple phobia, separation anxiety and OCD appear to be more prevalent in young childhood. Social anxiety disorder, GAD, panic disorder and agoraphobia appear to emerge more during young adolescence.

The Diagnostic Challenge of Anxiety Disorders in ASD

Recognizing anxiety comorbidity in ASD can be challenging for clinicians. A number of anxiety symptoms may appear to be explainable by ASD features and thus making the call for a separate diagnosis difficult to make. A good example of this is in assessing simple phobia. It is always difficult to distinguish a phobia of using public toilets represents a hypersensitivity to sensory stimuli, a rigidity of routine or a genuine phobia. In diagnosing social anxiety, individuals with ASD are known to have a compromise in sociability, this inevitability explains a certain found level of social anxiety and does not necessarily meaning the presence of a comorbid anxiety disorder. On the other hand, a compromised sociability would not necessarily lead to anxiety as evidenced in some “over friendly” individuals with ASD. In this context, anxiety may be presented in another way. Likewise in diagnosing comorbid obsessive-compulsive disorder, the drawing of distinction between the repetitive and restricted behaviour of ASD and obsession and compulsion behavior of OCD is not easy especially when the individuals are of young age and they cannot report the insight and distress associated with the behaviour.

10 Adding to this recognition challenge, clinicians often find there is no assessment
instruments specially designed for diagnosing comorbid disorders in ASD. There are a
number of tools developed for the general population, e.g. Child Behaviour Checklist¹¹ that
■ has been used to measure behavioural problems in individuals with developmental disorders
including autism. However, these instruments have not yet been tested for reliability and
2 validity in autism and the development of the Autism Comorbidity Interview-Present and
0 Lifetime version (ACI-PL) was an attempt to fill the void⁹. Presently, there is still a lack of
1 reliable and validated instruments to assess the comorbidity in ASD.
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The Intervention Challenge of Anxiety Disorders in ASD

Given the high prevalence of anxiety disorders in ASD, the need for an effective intervention is of imminent importance. In order to achieve this, an accurate and reliable diagnosis is needed as a first step. Currently, the treatment approaches (e.g. CBT) on comorbid anxiety disorders in ASD have been mostly based on those used for the general population. For CBT, there have been attempts to study the effectiveness of such cross-population application and the initial results were positive¹¹. However, the long term impact of the intervention is unknown as there are little data available. Apart from clinical treatment for comorbid anxiety disorders, preventive work in this regard is also important given a high prevalence of comorbid anxiety disorders is found across childhood to adulthood. A better understanding of how anxiety interact with ASD in both cross-sectional and longitudinal perspectives would help to identify important variables that contribute to the causation and maintenance of the comorbidity. Presently, the majority of studies is cross-sectional and there is a dearth of longitudinal investigations. Thus, very little is known about how anxiety symptoms impact on the individuals with ASD in the long run. Unless such systematic knowledge is available, effective intervention and preventive work, would be like making moves in the darkness.

Conclusions

There is a high prevalence of comorbid anxiety disorders in ASD in childhood, adolescence and adulthood. In different developmental stages, there are different prevalent anxiety disorders. Making proper diagnosis of comorbid anxiety disorders is a challenge given there are seemingly overlaps between anxiety and ASD symptoms and a lack of established specific assessment instruments. Likewise in intervention, the work to develop effective approaches on the targeted comorbidity has only begun. For prevention of the comorbidity, a need for longitudinal studies is warranted given the high prevalence of the comorbid anxiety disorders across different developmental stages

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Attention Bias Modification: A New Therapy for Anxiety Disorders

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Anxiety disorders are one of the most common mental disorders frequently found in adults, teenagers and children. Previous research has suggested that the worldwide lifetime prevalence of anxiety disorders reaches 16.6%¹, though with considerable variations in the figures among different studies. Higher prevalence rates are found from the NIMH (National Institute of Mental Health, United States of America) statistics, with 28.8% of the population aged 18 and older, and 25.1% aged between 13 and 18, got any one kind of anxiety disorders in their lifetime^{2,3}. Among them, 4.1% of the adult population and 5.9% of the teenage population, are classified as having severe anxiety disorder^{2,3}.

Anxiety disorders cause subjective distress or objective impairments to an individual, not only on a short-term basis, but probably a life-time influence. In a 21-year longitudinal study, anxious or withdrawn behaviors found in childhood were associated with increased risks of social phobia, specific phobia, panic disorder and agoraphobia, and major depression during adolescence and young adulthood⁴. In another study with long-term follow-up, adults with different anxiety disorders were found to have history of anxiety and depression problems when they were adolescents. Comorbidity of various anxiety disorders was also noted in the sample⁵. Given the remarkable prevalence, significant disturbances and persistent nature, earlier identification and appropriate treatment for anxiety disorders are deemed necessary.

The most common and effective treatments for anxiety disorders up to date are cognitive-behavioral therapy (CBT) and medication. CBT is a form of psychotherapy that focuses on identifying a person's thinking and behavioral patterns that lead to the anxiety problems, and alleviating the symptoms or problems by changing the distorted or unhelpful thoughts and behaviors. Cognitive accounts of anxiety suggest that information-processing bias plays a central role in the etiology and maintenance of anxiety disorders^{6,7}. Such cognitive model provides a theoretical ground for the development of CBT. According to this model, the processing of incoming information from the environment is guided by schemas (a person's cognitive framework or thinking pattern) that largely determine how the information is being attended, interpreted, or remembered. In anxious individuals, their schemas are thought to be biased toward threats⁶. The threatening information (e.g. hostile words or negative facial expressions) is privileged and accentuated at all stages of processing, including early processes such as attention and encoding, and later processes such as interpretation and memory⁸. In fact, a core therapeutic component of CBT is to help the anxious individuals to modify their anxious thoughts by direct and conscious challenging of their negative thinking patterns, their interpretation and memory biases⁹.

For the attention aspect which occurs at the earlier stage of information processing with less conscious control, however, there is lack of means to directly modify or manipulate

the attentional bias in CBT. In fact, animal and human studies have documented that fear and anxiety involve the activities of subcortical neural circuits that may happen before the emergence of conscious thoughts at the cortical level^{10,11}. Researchers commenced to explore this research area in the recent decades. According to previous findings, anxious individuals tend to allocate their attention towards threatening stimuli relative to neutral stimuli in a rather automatic way, which is commonly known as “attention bias”, a phenomenon that is not typically observed in non-anxious individuals⁸.

Attention bias is consistently found across different anxiety disorders, such as social anxiety disorder¹², generalized anxiety disorder¹³, obsessive-compulsive disorder¹⁴, specific phobia¹⁵, panic disorder¹⁶, and post-traumatic stress disorder¹⁷. In a meta-analysis with over 150 studies, attention bias is well established for its existence in individuals with anxiety problems, with evidence from different populations and across different experimental conditions⁸. These findings are considered to be important in the understanding of pathology and development of treatment in the anxiety disorders.

Attention bias can be conceptualized by breaking down into several components:

(1) facilitated vigilance – threatening stimuli are detected faster than non-threatening stimuli, (2) impaired disengagement – harder to disengage attention from threatening stimuli relative to neutral stimuli, and (3) attentional avoidance – tendency to avoid allocating attention to threatening stimuli^{18,19}. Some scholars suggested that the attentional system of anxious individuals is characterized by abnormal sensitivity to threatening information and they tend to direct their attention towards threatening information during the early and automatic stage of processing²⁰. Others argued that the attentional bias involves the later stage of processing, which is reflected in the avoidance of threatening stimuli²¹. A combined model has been proposed, in which the anxious individuals tend to direct their attention towards threatening information during the early, automatic and preconscious stage of processing, and as time passes, they change to direct their attention away from threatening stimuli in the later, more strategic and conscious stage of processing^{22,23}. On the other hand, a different perspective focuses on the sustained attention towards the threatening information, and they proposed that a delay in disengaging from threatening information might be the primary attentional difference between anxious and non-anxious individuals^{24,25}.

A variety of experimental tasks are developed to examine the different components of attention bias¹⁹. For examples, in the “modified Stroop task”, the threatening and neutral words are displayed in different colors. Subjects are required to report the color while ignoring the semantic content of the word. Longer response time to report the color of threatening words compared to neutral words is considered an indication of attention bias. In the “visual search task”, subjects are asked to detect a target stimulus that is embedded in a matrix of distracting stimuli. Attention bias is inferred from faster response to detect a threatening stimulus in a matrix of neutral stimuli, or slower response to detect a neutral stimulus in a matrix of threatening stimuli. The “dot probe task” is commonly used in the measurement of attention bias. Two words or pictures of faces (with one threatening and the other neutral) are displayed on a computer screen, followed by a probe in either the threatening or neutral location. Shorter response time for probe replacing the threatening stimulus reveals the condition of attention bias.

Studies using different behavioral experimental tasks tend to reach different conclusions for the attentional mechanism. While some studies indicated impaired disengagement in anxious individuals^{12,24,26-28}, others documented attentional avoidance when the threatening stimuli were presented in longer duration^{29,30}. The evidence for facilitated vigilance appears diverse^{12,15,18,31}.

Given the confusing picture of the attentional process and pattern, some research adopted the brain activity recording technique to investigate the underlying neuromechanism of attention bias in anxious individuals. The electroencephalography (EEG) and event-related potentials (ERP) provide useful information about the temporal sequence of attention as well as the neural substrates during the attentional process. In a previous study that examined attention bias in anxiety using ERP measures, adults with anxiety problem showed faster latencies and greater amplitudes to angry faces in the early attentional process³². In another ERP study that investigated the neuromechanism after the attention-bias modification training, the anxious adults who received training showed a reduction in mean amplitudes to angry faces in the later attention control process, which was not observed in the placebo training³³.

While some research examined the time course of attention bias and attentional mechanism, other studies were interested in the brain regions that are related to emotional recognition. In one study that examined the EEG activation when the participants were asked to identify the emotional faces in a modified Stroop task, the anxious participants displayed a cognitive bias characterized by facilitated attentional engagement with the fearful faces, and the fearful face trials were found to induce greater right frontal EEG activation³⁴. Baving and colleagues³⁵ investigated the different EEG patterns of frontal brain activation comparing the anxious vs. normal school-age children. Results found that children suffering from anxiety disorders exhibited significantly different patterns of frontal brain activation than non-anxious children.

With the accumulated research findings about the existence of attention bias in anxious individuals, a new therapy emerged to address this early stage of information processing and attentional bias. A number of studies have shown that the attention bias towards threatening information can be rectified by computer-based attention bias modification (ABM) training, so as to alleviate the anxiety symptoms and problems. Most ABM studies adopted the paradigm of dot probe task or its variants to measure and modify the attention bias⁹. In a treatment program for individuals with generalized anxiety disorder, subjects showed changes in their attention bias and reduction in their anxiety symptoms after 8 sessions of ABM training³⁶. In a randomized controlled trial for individuals with social phobia, subjects who received the ABM training showed facilitated attention disengagement from the threatening stimuli when compared to the control group. They also showed significant reduction of social anxiety symptoms in both the clinician-rated and self-reported post-assessments³⁷. In another ABM study for individuals with social anxiety disorders, patients in the training condition showed significantly greater reductions in social anxiety and trait anxiety when compared to patients in the control condition, and the clinical improvement was still maintained after the 4-month follow-up³⁸. In a study in which the ABM training

was used to supplement the CBT treatment, results found that though the ABM training did not yield significantly greater change on the outcome variables than the control group, the increased attentional control followed by ABM training was associated with symptom relief³⁹.

The above research findings are considered to be important in the understanding of pathology and the development of treatment in anxiety disorders, as appropriate intervention can be developed to target the different problems and needs at different stages of information processing, e.g., ABM training if the anxious individuals are more attentive to threats during the early automatic stage of processing, and CBT when the anxious individuals tend to use avoidance coping at the later conscious stage of processing. Given the remarkable prevalence and persistent nature of anxiety disorders, early identification and intervention in childhood may prevent aggravation of the problem and development of comorbidities. Since most ABM studies were conducted with adults and not many research data on the paediatric population has been published⁹, and sometimes children may not respond well to the traditional psychotherapy or are not suitable for medication⁴⁰, it is incumbent to have more research for the use of ABM in clinical practice – use of ABM as an alternative, or its use in supplementing the CBT.

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Mental Health Promotion and Related Services in Student Health Service

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Introduction

The Student Health Service (SHS) of the Department of Health aims to safeguard the health of school children, from physical to psychosocial, through health promotion and disease prevention services. Healthy body and mind enables our students gain maximum benefits from the education system and develop their full potential. Services are provided by Student Health Service Centres (SHSCs), Special Assessment Centres (SAC) and the Adolescent Health Programme (AHP).

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Services in Student Health Service Centres

Our target clients are primary and secondary day school students. In the school year 2014/15, about 640,000 students enrolled. Enrolled students will be given an annual appointment at one of the twelve SHSCs, designated by the school they attend, and where they receive assessment service annually free of charge. The health programmes are designed to cater for their health needs at various stages of development. These services include health screening and assessment, physical examination, individual health counselling and health education, and referral of students with significant health problems to respective specialists for follow up.

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Regarding mental health screening in the SHSCs, assessment of psychosocial health and behaviour is performed through several health assessment questionnaires and subsequent interviewing by trained nurses. The Culture Free Self-esteem Inventories (SEI) is for children of primary 4 and primary 6 students. The Rutter Behavior Questionnaire (RBQ) is for parents of primary 2, primary 4 and primary 6 students. The Youth Self-Report (YSR) is for secondary 4 and secondary 6 students. Nurses, through interviewing and obtaining the scores in the questionnaires, will make a preliminary assessment or a provisional diagnosis of the problem. The detection rate of symptoms of self-esteem problem, through the SEI, was 4.4% in the school year 2014/15 (Table 1). The detection rate of symptoms of psychosocial problems by the RBQ and the YSR was 5.8% and 2.4% respectively in the school year 2014/15 (Table 2, Table 3). Through further interviewing by nurses or consultation by doctors, students with various psychosocial and mental health problems can be identified.

These problems range from parenting issue, academic problems, mild emotional disturbance, significant psychosocial problems, psychiatric symptoms and mental illnesses, to even violent behavior and suicidal ideation.

Table 1: Detection rate of students with suspected low self-esteem problem by Culture Free Self-esteem Inventories in primary 4 and primary 6 students in School year 2012/13, 2013/14 and 2014/15

	2012/13	2013/14	2014/15
Number of questionnaires administrated	80,745	77,870	76,533
Number of students suspected low self-esteem problem	3,217	3,331	3,357
Detection rate of students suspected low self-esteem problem	4.0%	4.3%	4.4%

Table 2: Detection rate of students with suspected psychosocial problem by Rutter Behavior Questionnaire in primary 2, primary 4 and primary 6 students reported by their Parents in School year 2012/13, 2013/14 and 2014/15

	2012/13	2013/14	2014/15
Number of questionnaires administrated	87,752	88,354	90,132
Number of students suspected psychosocial problem	4,466	5,004	5,190
Detection rate of students suspected psychosocial problem	5.1%	5.7%	5.8%

Table 3: Detection rate of students with suspected psychosocial problem by Youth Self-Report in secondary 4 and secondary 6 students in School year 2012/13, 2013/14 and 2014/15

	2012/13	2013/14	2014/15
Number of questionnaires administrated	39,309	37,418	34,459
Number of students suspected psychosocial problem	799	1,040	839
Detection rate of students suspected psychosocial problem	2.0%	2.8%	2.4%

Students with emotional or suspected mental health problems would be referred to see clinical psychologists of the SACs for more in-depth assessment. Depending on the nature and severity of problems, they may also be referred to the specialists in Hospital Authority (HA), the Child and Adolescent Mental Health Community Support Project (CAMcom), the Student Support Team in school, the Social Welfare Department or other welfare agencies for further management of their problems.

For mental health promotion, health talks and workshops on topics of psychological and mental health are also held in SHSCs. The Junior Health Pioneer Workshops are held regularly in all twelve SHSCs for primary 3 students (Table 4). The Workshop aims to promote positive thinking in our pre-adolescents and strengthen their resilience against adversities. It also teaches them the harmful effects of addictive behavior like smoking, alcohol, drug abuse and indulgence in gambling, shopping or internet/smartphone. They are then armed with various refusal skills against these addictive behaviours.

Table 4: Number of Junior Health Pioneer Workshop held in SHSCs in School year 2012/13, 2013/14 and 2014/15

	2012/13	2013/14	2014/15
Number of Junior Health Pioneer Workshop held in SHSCs	1,556	1,569	1,668

Leaflets with health messages are available to students and their caretakers. Topics include building self-esteem, emotion management, stress management, interpersonal relationship, prevention of smoking, excessive drinking and drug abuse, sex education. Promotional materials (Figure 1) on mental health are also available on the SHS website: <http://www.stu.denthealth.gov.hk/>

Figure 1: Promotional materials on mental health



Services in Special Assessment Centres

Students with suspected psychological or psychiatric problems, such as attention deficit/hyperactivity disorder, anxiety disorder, mood disorder, conduct disorder, autism spectrum disorder, etc., are referred to clinical psychologists for psychological assessment. The psychological assessment aims at understanding a person and his/her behavior, personality and capabilities.

There are some differences in the common presenting problems between primary school students and secondary school students. For primary school students, the most common referral reason to psychological assessment is the assessment of attention and hyperactivity problems. It is especially true for the early primary school students when they enter the mainstream school system where the demand on their abilities to pay attention and comply with school rules increases. Other behavioural problems such as non-compliance, oppositional behaviours, fighting at school, are also often reported. It turns out that around 40% of the referred students are diagnosed to have Attention Deficit/Hyperactivity Disorder or related problems. Some primary school students are referred by their parents for mood problems. Biting fingernails, being too shy, avoiding school and other anxiety-provoking situations, and complaining somatic problems are common anxiety-related problems reported

by parents of primary school students. These students are often found to have various degree of anxiety problem or disorder later. Around 10% of the referred students have anxiety and mood disorder or related problems. At the same time, there are students with mood problems presented with temper tantrum, irritable mood, non-compliance and crying spell.

The picture of mental health problems in secondary school students is somewhat different. Their common presenting problems are parent-child relationship problems, anxiety and mood problems as well as socialization problems. Often it is the parents who raise concerns for their teenagers' oppositional behaviours and unwillingness to communicate. This parent-child relationship problem is often accompanied by other problems such as low achievement at school, anxiety and mood problem, peer relationship problem at school, etc. Emotional instability, inadequate stress management skills and social skills are common complaints from adolescents and their parents. Students with peer relationship problem often have low self-esteem and showed heightened sensitivity to disapproval and criticism.

During psychological assessment, clinical interviews and standardized assessment tools may be conducted depending on the student's condition. The clinical interview is organized to achieve clinical purposes including establishing rapport, gathering information relevant of diagnosis, observing student's personality, temperament, and manner of interaction with others and formulating and explaining plan of assessment strategy. Standardized assessment tools are also used to assess students' functioning of various aspects, such as attention functioning, mood functioning, intellectual functioning and other psycho-social/ mental health problems. While broadband measures are collected from raters from multiple sources (e.g. parents, teachers), narrowband measures on specific psychological dimensions (e.g. anxiety level, self-concept) are often used.

When an initial assessment is made, student with various degree of mental health problems and the parents will be provided with feedback on the assessment, psychoeducation and brief support to enhance the student's psycho-social health and parenting skills. For cases that show significant impairments, timely referral and/or suggestions for management by professionals of other organizations will be advised. Cases with psychiatric disorders, family problems and persisting peer relationship problems, etc., may be referred to relevant parties, such as child psychiatric services of the HA, integrated family service centres from the Social Welfare Department and school support team, for management and long-term follow up. Relevant supports from the community, such as training group, community project on enhancing parent-child communication, bereavement counselling and parent support group will be identified to address the student's as well as the family's needs.

Services of Adolescent Health Programme

Adolescence is a period of transitions: physical, psychological, social, intellectual and spiritual aspects. The future of adolescents will be much influenced and shaped themselves, their environment, and adults who provide them with support and opportunities¹.

Development of resilience is linked with prevention and WHO has identified six themes vital to successful outcomes:

- Skills building
- Norms and expectations
- Youth participation
- Adult-youth relationships
- Membership
- Accurate information and access to services

Adolescence is also one of the early stages of life that provides an important opportunity for promoting mental health and preventing mental disorders. Equipping adolescents with knowledge and skills to meet the challenges in life and nourishing them with positive experiences are essential in their development to adults who will competently and confidently participate in society and enjoy a healthy and joyful life. In the Psychosocial theory of adolescent development², six dimensions of wellness to reflect individual's mental status:

- Self-acceptance
- Positive relations with others
- Autonomy
- Mastery of environment
- Purpose in life
- Personal growth

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Maturity of our next generation is marked by a clear comprehension of life's purpose, a sense of directedness, and intentionality. Thus, a member of the society functions positively has goals, intentions, and a sense of direction, all of which contribute to the feeling that life is meaningful.

The above theories, themes and skills are the framework for developing a programme to strengthen the psychosocial health of the adolescent in order to safeguard the mental wellbeing in adulthood and later life. Adolescence is the time when various health-compromising behaviours like smoking, alcohol use, substance abuse etc. begin to set in.

Among developed countries, programmes to enhance life skills and promote mental wellbeing have been implemented such as Life Skills Training Programme in US and MindMatters in Australia. The SHS has developed the AHP with the aim of promoting psychosocial health of the secondary school students. Through interactive discussion and games, students learn to adopt basic life skills including solving problems, communicating with others and working as a team, critical thinking, self-understanding and managing their emotions. These skills strengthen their resilience and enhance them to set and pave their paths to their individual life goals, to face challenges and adversities, to stay positive and to refuse addictive behaviours.

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This Adolescent Health Programme is a multi-disciplinary team working in school setting. It consists of two main components: basic life skills training (BLST) for lower form students (Table 5) and topical discussions for all form students, their teachers and parents (Table 6).

It is our goal and commitment to work with other stakeholders including parents and schools to flourish a healthy and happy new generation.

Table 5: Topics of basic life skills training programmes

Secondary 1	Secondary 2	Secondary 3
Problem solving	Active listening	Analytical thinking
Emotional management	Personal value reflection	Coping with adversity
Stress management	Assertiveness training	Mutual support
Communication skills (I)	Anger management	Money management
Interpersonal skills	Conflict resolution	Time management
Team building	Personal growth (II)	Learning
Personal growth (I)	Creativity	Goal setting
Healthy living	Self-esteem building	Communication skills (II)
Self-appreciation	Appreciation of daily living	Health promotion
Refusal skills		

Table 6: Topics of topical programmes

For students	For teachers and parents
Sex education	Personal stress and emotion management
Harmonious interpersonal relationship building	Understanding adolescents
Correct attitude and skill in learning	Money management among their children
Diet and nutrition	Healthy use of Internet among their children
Prevention on smoking, drinking and drug abuse	Handling of adolescent dating and love affairs
Goal-setting	Empower their children to face adversity
Anxiety and adversity management	Conflict management with the children
Prevention of bullying	Skills to facilitate children to adapt to secondary school life and learning
	Suicide prevention
	Prevention of drug abuse
Healthy use of Internet and electronic screen products	Prevention of drug abuse

Echoing the Joyful@HK Campaign³, the key messages to achieve and enhance mental well-being SME: sharing (與人分享), mind (正面思維) and enjoyment (享受生活) were integrated into the content of the BLST Programmes. In the school year 2016-17, the Education Bureau and DH will jointly organized the “Joyful@School” campaign⁴ to empower students to build resilience against adversities in life, enhance their understanding of mental health issues, increase their awareness of mental illness, encourage help-seeking and promote de-stigmatisation.

Conclusion

Throughout the years, the SHS has been promoting mental health of the students through provision of centre-based as well as outreach school-based services, focusing on disease prevention and health promotion. In this ever changing world, the SHS will continue to provide quality preventive services and programmes to promote mental health of the students in Hong Kong.

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3. Joyful@HK Campaign is a territory-wide public education and publicity campaign to promote the importance of mental health and mental well-being launched by the Department of Health in 2016. <http://www.joyfulathk.hk/en/index.asp>
4. Joyful@School Campaign is jointly organized by the Education Bureau and the Department of Health targeting upper primary and secondary school students and to be implemented in school year 2016-17.

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Support Service for Children with Anxiety Problems and their Parents in Child Assessment Service

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Introduction

In Child Assessment Service (CAS), the conservative label of “anxiety problem” instead of “anxiety disorder” is often preferred, partly because of the constraint of time for clinical observation and interview of the subtle presentation of emotional symptoms in young children. In our recent ten year review, the number of children diagnosed to have anxiety problems / disorders in CAS was found to show a remarkable increase from 164 in 2006 to 479 in 2015¹. This somehow reflects the heightened sensitivity of our professional colleagues throughout the years. Nevertheless, the total number of cases is still small in comparison with the worldwide prevalence of 6.5 %² and the local prevalence of 6.9 %³. Such low rate of identification is closely related to the internalizing nature of the anxiety symptoms which may be overlooked by the parents who usually show more concern to children’s learning and externalizing behaviors. Since anxiety disorders in childhood predict a range of psychiatric disorders in adolescence⁴ and adults^{5,6} and from adolescence to adulthood⁷, psycho-education for parents of young children and early intervention for children with anxiety problems / disorders are preventive measures for future psychiatric disorders.

While children with anxiety problems / disorders are often referred to child psychiatric service for further evaluation and long-term treatment, CAS provided interim support service for the parents and children. Parents are invited to attend a one-day parent workshop (or anxiety information day as mentioned below) for better understanding of the problem/disorder. Furthermore, a 6-session parent group is offered to parents of preschool children, and a 9-session treatment group is provided to school aged children and their parents. The following is a brief description of these interim services.

Anxiety Information Day

This one day parent workshop provides psycho-education and practice for parents of children assessed to show features of anxiety problems / disorders. The content include knowledge on emotions, anxiety in particular; types of anxiety disorders, etiological factors contributing to the disorders and basic principles of psychological and medical treatments. The cognitive behavioural approach is adopted. Learning theories are mentioned and the role of parents is stressed. Specifically, how parents’ emotional reactions contribute to children’s development of anxious behavior and how their over-protective style may have encouraged children’s avoidant coping behavior and thus resulted in maintenance of anxiety are described. The workshop also highlights skills facilitating communication with children on

emotions and feelings and ways to help changing anxious thoughts. Moreover, community resources are introduced so that parents can arrange the children to attend some service or training while waiting for psychiatric service. In recent years, such information day would be conducted twice a year and positive feedback have been received.

Treatment Group for School-aged Children

The Anxiety Group Treatment Program⁸ was adapted from the Coping Cat CBT group treatment program⁹ developed by Flannery-Schroeder and Kendall. The essence of cognitive behavioral treatment (CBT) and the core elements of the original program were preserved. The adaptation and modification were made to meet the cultural and local needs. The original 16 one-hour sessions were changed to 9 two-hour sessions to make it more feasible for the local families. The content includes psycho-education on emotions, anxiety, affect recognition, cognitive restructuring, relaxation, rewarding oneself for brave behaviour and gradual exposure which constitutes a significant portion of time of the program (roughly 6 of the 9 sessions are involved). The acronym FEAR used in the Coping Cat program was replaced with a Chinese acronym which links up the skills learnt from affect recognition, identifying negative thought, cognitive restructuring, problem solving and rewarding oneself for applying the coping skills. Homework assignments and exposure exercises are given to encourage the participants to have real life practice apart from group sessions. The target participants are 12 to 14 primary school aged children with anxiety problems / disorders. Five parent sessions run in parallel with the group to enhance the parents' understanding of the treatment rationale and to sort their cooperation in helping their children. Parents are also encouraged to stay to observe for the rest of the sessions. In recent years, we run two treatment groups during the summer holiday each year and positive feedback has been received. The effectiveness of the treatment group was documented in a randomized control study by Lau, Chan, Li and Au in 2010¹⁰. It was evidenced after the group treatment as well as in 3-month and 6-month follow-ups. Moreover, children's anxiety cognition and their ability to cope with anxiety-provoking situations mediated the treatment gains.

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Early Intervention Program for Preschoolers

Empirical studies have established that anxiety disorder may appear in preschool children as young as three years old¹¹. With the increased awareness of our professional colleagues, the number of preschool children assessed to show anxiety symptoms is increasing. The Cool Little Kids Anxiety Prevention Program¹² was translated into Chinese and adapted for use in CAS. The 6 two-hour group sessions was designed for parents of preschoolers who are at risk of developing anxiety disorders in later years. The main components include psycho-education and ways to manage children's anxiety as well as parents' own anxiety. Our preliminary findings¹³ in 2014 of 15 parents attending all 6 sessions showed a trend of improvement, though not statistically significant. Clinically, some parents reported improvement of their preschool children's anxiety symptoms and some also reported that they gained more insight of their own anxiety and found the cognitive strategy useful. In these two years, more groups have been conducted and further modification and adaptation

of the program have been made. In the coming future, empirical study will be done to investigate into the effectiveness of the intervention program.

Others

Apart from direct clinical service, we also publish factsheet providing psychoeducation materials on different types of anxiety disorders, etiological factors, prevalence rates in child population, basic principles for treatment and list of community resources. A picture booklet titled “焦慮，我不怕”¹⁴ was also published with the aim to help senior primary school students to understand their own problem and ways to help themselves cope with anxiety feelings. To date, the factsheet has been uploaded to our website (<http://www.dhcas.gov.hk/>) and the picture booklet sent to public libraries so as to be a means of public education. It is our wish that public awareness of this internalizing problem of anxiety disorder can be enhanced which will facilitate early identification and intervention promoting people’s mental health in the long run.

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Overview of the Child and Adolescent Mental Health Community Support Project (CAMcom) Service in Hong Kong

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Background

Anxiety has long been identified as one of the most common mental health disorders affecting children and adolescents. Lifetime prevalence rate for adolescents with anxiety disorders in United States reaches 25.1%¹ whereas 3.3% children/adolescents in United Kingdom are affected by anxiety disorders². In Hong Kong, about 6.9% adolescents suffer from anxiety disorders and another 38.4% manifest anxiety features³. Moreover, Kessler et al⁴. estimated that about half of the lifetime mental health disorders first took place by age 14 whilst the median age onset of anxiety disorder is estimated at age 11. Early identification and intervention community programs for children and adolescents hence have been topped at the agendas of many leading national mental health institutions^{5,6,7}. In Hong Kong, the Child and Adolescent Mental Health Community Support Project (CAMcom), an extended arm of the Child and Adolescent Psychiatric Service of the Hospital Authority, has long been providing early identification and intervention services to children and adolescents with mild to moderate level of anxiety and depressive issues at the community level.

CAMcom

Since its first launch in 2005, CAMcom has long been advocating proactive public educations and supportive activities with schools and community partners. Also, it aims at providing the best community resources matching advices, and delivering evidence-based intervention group or individual follow-ups in order to tackle the prevalence of potential mood issues among the younger generations. Initially, this project was a joint initiative between the Social Welfare Department and the Hospital Authority (HA). In December 2008, the Hospital Authority has taken up the whole project with Kwai Chung Hospital (KCH) as the project coordinator. Steered by psychiatrists across clusters of HA and a senior clinical psychologist of KCH, field team comprises clinical psychologist for supervision and in-house training services whilst experienced social workers are responsible for different services deliveries in the community.

Today, CAMcom is already one of the largest service providers of preventive intervention on mental health problems for children and adolescents in Hong Kong. Every year, approximately 60,000 to 70,000 children and adolescents, as well as their respective primary caretakers, teachers and social workers would be provided with direct access to CAMcom services.

Services

Every year, CAMcom mails out thousand odd service invitations to all local primary/secondary schools as well as community partners. The services range from exhibitions, telephone enquiries, community service matching advices, public talks, massive mood screening, and various low intensity psychological intervention programs on anxiety and/or depressive features. Massive screening will be conducted via schools or community partners who have indicated interests in CAMcom anxiety management group program services. These programs are delivered either in one-day or six-session group formats, primarily for students who have subclinical anxiety features. Also, a six-session depression management program for students with subclinical depressive features will be launched by September 2016. Parents/Primary caretakers or children/adolescents themselves are welcomed to seek direct services from CAMcom.

■ All CAMcom intervention services are delivered in cognitive behavioral therapy (CBT) approach. CBT is a structured, time-limited and present-oriented psychotherapeutic approach, aiming at resolving current problems via modifying dysfunctional thoughts and behaviour⁸. It is also a renowned efficacious psychological treatment approach for youngsters with anxiety disorders and depression^{9,10,11}.

Anxiety Management Programs

Content of the anxiety management programs, including both one-day or six-session group formats, is based on the “Cool Kits Child Anxiety Program”, a CBT anxiety group program for children developed by Rapee et al¹².

In the one-day group program, interactive group games are designed for students and their respective parents/primary caretakers with a view to optimizing their anxiety managements. Major components of the program include psychoeducation on anxiety; relationships amongst emotions, thoughts, behavior and physiological responses; as well as respective tips for students and parents/primary caretakers to deal with excessive worries.

During the six-session program, three types of groups are offered including parents group for junior primary students; parents and children group for senior primary students; and adolescents group for those in junior secondary students. In addition to the content of the one-day program, in-depth interactive and interesting activities on cognitive restructuring; gradual exposure; assertive training; problem solving as well as relapse prevention are covered.

Over the years, clinically significant reduction on overall anxiety levels had been reported by both students and their parents after the completion of the six-session CAMcom anxiety management programs. These findings were based on the retrospective study of 647 CAMcom six-session anxiety management group participants who had completed the pre-group and post-group treatment surveys between April 2011 and March 2015.

CAMcom Website (www.ha.org.hk/CAMcom)

In view of the effectiveness of the CAMcom six-session anxiety management group program, expeditious early identification and intervention to children and adolescents with subthreshold anxiety features is of paramount importance. Optimizing internet platform to facilitate massive screening as well as to support the delivery of treatment is the newest development of CAMcom to-date.

In July 2015, CAMcom with the funding support from The Hongkong Bank Foundation, has upgraded its website to “CAMcom LAB” (www.ha.org.hk/CAMcom). Efficiency and effectiveness of early identification via massive screening at schools can now be completed via internet within minutes. The upgraded website also provides CAMcom service recipients to access internet CBT therapeutic materials prior to, during and after the services. Moreover, this newly upgraded CAMcom website also contains up-to-date psycho-educational materials of anxiety and depression that address the local needs of students, parents, teachers and social workers.

Conclusion

CAMcom of the Hospital Authority has long been providing proactive community-based early identification and psychological interventions to children and adolescents with subthreshold mood features. Retrospective study supported that the CAMcom six-session anxiety management group program is an effective early intervention to children and adolescents with subthreshold anxiety features. Latest upgrade of the CAMcom website enhances both the efficiency and effectiveness of early identification and intervention. It also provides a user-friendly internet CBT therapeutic supports to members of public.

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