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Prevention science: family evidence-based, adolescents and drug use

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Abstract: background - One of major cause of disability is mental illness (WHO, 2013). Evidence-based family programs have been considered one of the most effective methods for reducing mental health and substance abuse disorders in youth. A Cochrane review (Foxcroft et al., 2003) concluded that the Strengthening Families Program (SFP) is one of the most effective substance abuse prevention program and also cost effective. Aim and methods - Determine if the family Portuguese SFP outcomes are as effective as the original SFP. The outcomes were compared using data from Portuguese families (n=41) and SFP international norms using a quasi-experimental, non-equivalent control 2 group pre-and post-test design. Standardized test scales were used. A 2x2 ANOVA produced the outcomes including p-values and effect sizes. Results - According to original SFP norms, statistically significant positive results ($p \leq .05$) were found for 16 (or 76.2%) of the 21 outcomes measured and medium to large effect sizes, including family outcomes for Portuguese families. Conclusion - evidence-based family programs are a strong and robust intervention strategy to prevent family risk factors and promote protective factors.

Keywords: Prevention, adolescence, family-evidence based programs, Strengthening Families Program.

Resumo: introdução - A doença mental é uma das principais causas de incapacidade (WHO, 2013). As intervenções familiares, baseadas na evidência científica, constituem-se como estratégias eficazes, na prevenção de doenças mentais e uso de substâncias psicoativas na adolescência. A revisão da Cochrane (Foxcroft et al., 2003; 2012) concluiu que o Strengthening Families Program (SFP) é um dos programas, com um rácio custo-benefício positivo, mais

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eficaz na prevenção do consumo de drogas. Objetivo e métodos - Determinar se os resultados da categoria família na amostra portuguesa são tão positivos quanto os originais. A amostra incluiu famílias portuguesas e famílias que participaram no SFP original, utilizando um plano quasi-experimental, com desenho de pré/pós-teste (2 grupos) com grupo de controlo não equivalente. Aplicou-se uma bateria de instrumentos estandardizada. Utilizou-se uma ANOVA 2x2, incluindo os valores de p e a magnitude do efeito. Resultados - À semelhança dos resultados da versão original do SFP, encontram-se resultados estatisticamente significativos ($p \leq .05$) em 16 (ou 72%) dos 21 *outcomes* medidos e magnitude do efeito médio- grande, incluindo os *outcomes* da família. Conclusões - Os programas familiares, baseados na evidência científica, constituem uma forte e potencial estratégia na prevenção de fatores de risco e promoção de fatores protetores na família.

Palavras-chave: Prevenção, adolescência, programas familiares baseados na evidência científica, Strengthening Families Program.

Introduction

Adolescent developmental difficulties, such as delinquency, substance misuse and others risk-taking behaviours are associated with co-morbid mental health, and behavioural problems. Hence, prevention of mental health problems in adolescents is of great international concern.

The increasing rates of adolescents' substance use and increased risky consumption patterns of binge drinking, and use of illegal drugs, such as cannabis, are all becoming important across industrialized countries in recent years in Europe and United States of America (EMCDDA, 2014; Johnston, O'Malley, Bachman, & Schulenberg, 2013; Kumpfer, Xie, & O'Driscoll, 2012; Frise & Grube, 2010) and is related to the increasing levels of prevalence reported by girls not only in drug use but also eating disorders, depression, anxiety problems and prescription drug use (Kumpfer & Magalhães, in press; Kumpfer, Smith, & Summerhays, 2008).

The assumption has been that drug use in young people was in part because of the worldwide pro-drug youth culture, but also more health problems are on the rise worldwide. For example, according to the last SAMHSA's Behavioral Health Report (2013), 22% of adolescents, between 11 to 18 years, have been diagnosed with at least one mental or substance use disorder in the past year. The highest prevalence rates being 38% lifetime prevalence of an

anxiety disorder in girls and 33% lifetime prevalence of impulse disorders in boys. One possibly cause of this epidemic of adolescent behavioural health problems including substance abuse is a more toxic and stressful family environment for children, which exacerbates the expression of inherited genetic risks for behavioural and emotional disorders. According to gene x environment interactions studies in epigenetics lack of nurturing and protective parents increases stress and cortisol levels in children and increases the expression of risky inherited genes (Jirtle, 2010) and can change genes structure to the next generation (Champagne & Meaney, 2007; Champagne, 2010). Lack of a nurturing parent can program increased stress reactions in children resulting in reduced exploratory behaviours, cognitive development, and oxytocin binding even in later generations (Champagne & Meaney, 2007; Champagne, 2010).

Also the literature points out that teen users are at significantly higher risk of developing an addictive disorder compared to adults, and the earlier they began using, the higher their risk. Nine out of 10 people who meet the clinical criteria for substance use disorders involving nicotine, alcohol or other drugs began smoking, drinking or using other drugs before they turned 18 (CASA, 2011). Also research found that at the age of 15, young people whose parents had used drugs during the previous year were more than twice as likely to have used drugs as those whose parents had not used drugs, adding that drug use by elder brothers and sisters can also be a factor (EMCDDA, 2009).

If our interest is in the well-being and mental health of all, we need to go beyond the alleviation of symptoms or problem behaviours, and consider approaches which can benefit the individual as a whole, including family. The alarmingly low rates of well-being, both objective - *health, educational attainment* - and subjective - *life satisfaction* - among children and youth in economically advantaged centers and worldwide crises (WHO, 2013) makes this issue not only timely, but urgent.

The consequences of this worldwide occurrence have been costly to governments with increased numbers of individuals and families needing additional social, health and financial supports. Also it's important to take into account, that unfortunately, today even functional parents are spending less time with their children because of the worldwide economic crisis, working more hours, and multiple demands on their time. If parents can't spend much time parenting their children, they should get more efficient with the little parenting time they have available. Hence, providing and disseminating effective prevention and treatment programs

targeting families and young youth needs to be a priority, because could buffer against the current upswing in adolescent behavioral mental and physical problems (Burkhart, 2013; Kumpfer, Xie, & Magalhães, 2012, UNODC, 2009).

A promise approach is established on evidence-based practice that means it has been rigorously evaluated in experimental evaluations – like randomized controlled trials – and shown to make a positive, statistically significant difference, in important outcomes as an application of scientific prevention that seeks and is focused primarily on the systematic study of these potential precursors of dysfunction - *risk factors* - as well as components or circumstances that reduces the probability of problem development in the presence of risk - *protective factors*. Also is important to take into account prevention classification, as well form and function (Foxcroft, 2013).

Studies and comparative effectiveness reviews point out that a promise approach to enhancing the well-being of children and families and prevent drug misuse is evidence-based family strengthening or family skills training interventions appear to be the most effective (Foxcroft et al., 2012; Kumpfer, Xie, & Hu, 2011; UNODC, 2009; Kumpfer, Alvarado, & Whiteside, 2003) approach to delay the onset of alcohol and drug use among young people. It is also important implementing parenting and family programs to help families raise their children and youth in a more responsible, nurture and secure environmental (Kumpfer & Hansen, 2014).

One of this programs and that will be analyse in the present paper is the *Strengthening Families Program* (SFP) that was first developed by Dr. Karol Kumpfer at the University of Utah. It was developed and tested on a US National Institute of Drug Abuse (NIDA) research grant as the first selective prevention program for high-risk children of drug abusers ages 6 to 11 years of age.

Is a highly structured family skills training program that is traditionally conducted in a 7 to 14 week multifamily group format involving three to four gender balanced and culturally sensitive group leaders and a coordinator.

SFP is guided by its underlying etiological or SEM-tested causal theory, the *Social Ecology Model of Adolescent Substance Abuse* (Kumpfer, Alvarado, & Whiteside, 2003), which found the family pathway of family attachment, parenting skills and supervision, and

communication of positive family values was the most powerful in protecting youth from impulse control disorders (e.g., substance abuse, delinquency, teen pregnancy).

The major theories guiding the development of SFP like other family interventions are the family systems theories elaborated for example, by Bowen (1991) and others who observed in their clinical work that children's problems were rooted in the way parents dealt with or treat their children. The program intervention theories are based on social learning theory, cognitive behavioural theories and self-efficacy theories.

The goal of SFP is to teach parents skills to raise healthy and happy children and prevent adolescent behavioral, mental health and developmental problems. To reach these long-term goals, the major short term measurable objectives are to: 1) Improve family relations (e.g., decrease family conflicts and improve family cohesion, communication, parent-child time together; family planning and organization, and strengths and resilience); 2) Increase parenting skills (e.g., parenting efficacy, positive attention and praise, parent's empathy with child; effective discipline without physical punishment and decrease parent's use or modeling of drugs); and 3) Increase children's skills (e.g., communication skills; peer refusal skills; recognition of feelings; coping skills for anger and criticism; compliance; and decrease overt and covert aggression, attention deficits and depression (Kumpfer, Magalhães, Whiteside, & Xie, in press).

Also cost-benefit studies (Miller & Hendrie, 2008; Spoth, Guyll, & Day, 2002) report a positive cost/benefit ratio of \$9.60 to \$11 which underestimated the total benefit to the family as they were based on benefits to just the student. Of interest also is that Miller and Hendrie (2008) also reported that no other substance abuse prevention program prevented as many adolescents from using substances, such as, 18% of all youth participating in SFP will reduce or never initiate alcohol use compared to no-treatment youth and 15% for marijuana, 11% for other drugs and even 7% tobacco.

The SFP has been internationally used for substance abuse prevention with cultural adaptations for different groups and have been replicated in 35 countries with dissemination funding from the United Nations Office of Drugs and Crime (UNODC), the Pan American World Health Association (PAHO), the International Rescue Committee (IRC), and various governments.

Replications of SFP in randomized control trials (RCTs) and quasi-experimental studies in different countries with different cultural groups by independent evaluators have found SFP to be an effective program in reducing multiple risk factors for later alcohol and drug abuse, mental health problems and delinquency by increasing family strengths, children's social competencies and improving parent's parenting skills (Kumpfer, Alvarado, Smith, & Bellamy, 2002).

Later age and cultural adaptations (SFP 3-5 and SFP 12-16) have been developed and found equally effective. Recently a new 10 to 14 session SFP 7-17 Years Home Use DVD and family group versions were developed and found effective (Kumpfer & Brown, 2012).

Recent SFP RCT studies, and most important to promoting mental health, also found SFP reduced by 50% depression, anxiety, substance abuse, sexual acting out, and delinquency in genetically at-risk youth who had attended SFP 10 years earlier in a RCT school study (Brody et al., 2010; 2012; 2013). Saliva tests were used to identify two genetic risk markers of mental disorders - the 5-HTTLPR serotonin transporter gene and the 7-repeat dopamine gene. About 40% of Europeans and 60% of Asians have these genetic risks for mental disorders. Hence, using family interventions to increase nurturing parenting and reduce stress that triggers these risky genes is very important in promoting mental health. Also, SFP is one of the few proven child maltreatment prevention programs with days in foster care for children of addicted parents cut in half in several total state field trials (Brook, McDonald, & Yan, 2012).

Therefore, so far research outcomes show that evidence-based family interventions, such as SFP, with the necessary core ingredients of local adaptation, can reduce risk factors and increase family protective factors and resilience to a whole host of psychological and social problems and promote the use of well established system for facilitator training and program implementation.

Method and materials

The purpose was to determine if one of the most effective alcohol and drug prevention programs, the *Strengthening Families Program 6-11 Years*, is as effective for Portuguese families as is the original SFP. One of the hypotheses presumed was that SFP would significantly improve family outcomes from pre- to post-test in families in Portugal.

Using a quasi-experimental, non-equivalent control 2 group pre- and post-test design with post-hoc, and sub-group analysis comparisons the outcomes were compared for the SFP 6-11 years Portuguese families to the SFP 6-11 years international norms.

A sample of Portuguese families were assigned ($n=41$) and a sample from the SFP National Database ($n=1600$) of families who have participated in SFP. The sample was chosen based on demographic data such as the children's age, gender, as well as a proxy for acculturation such as whether they speak a language other than English in the home.

The measures include basic demographic information and others standardized parent and youth SFP instruments currently exist measuring 18 parenting, family and child mental health outcomes. These validated scales assess parents' communication, involvement, supervision, positive discipline, parenting efficacy, family cohesion, communication, organization, conflict, family resilience, and child mental health (depression, AD/HD, overt and covert aggression, criminality, and social behaviours) and drug use. To reduce testing burden, only sub-scales of the selected instruments were used to measure outcome variables and they are taken from well-known and accepted instruments in this field. The Cronbach internal consistency alphas were calculated for all of the outcome scales for the Portuguese sample and found to have good reliability when compared with the original scales.

The voluntary informed consent of each participant was sought and obtained prior to their participation in the research. Site staff delivered the pre- post-test retrospective questionnaires to participants in a group setting on the week before graduation.

The data analysis includes a post-hoc statistical 2 group by 2 repeated measures (pre- and post-test) analysis of variance. Analysis was conducted included with-S pre-to post-test outcomes and between groups outcomes comparisons. In addition to pre- and post-test mean changes, standard deviations, and statistical differences ($p \leq 05$), and Cohen's d effect sizes (after Cronbach's alpha reliabilities for the 18 SFP parent, child and family outcome scales are determined to be reliable).

It is also important to underline in this phase that intervention facilitators received the standard training certified to implement the program and have some experience with work and delivery prevention programs in families. Also group facilitators received training in family evidence-based curriculum, including orientation to the family program and philosophy of the intervention. Also was implement a cultural adapted process, following the recommend steps

for SFP cultural adaptation and evaluation (Kumpfer, Magalhães, & Xie, 2012), as described in literature, culturally adapted programs can improve recruitment and retention by up to 40% even if the cultural adaptation did not change the outcomes (Kumpfer, Alvarado, Smith, & Bellamy, 2002). The cultural adaptation process is an on-going process and staff and coordinators are trained and encouraged to continue this process. Hence, it is important to note that adaptation of the original program structure was not changed, the session content was not changed, no sessions were omitted or rearranged, the home practice assignments continued and the program length remained at 14 weeks to allow adequate time for families to change.

Results

The results that will be present focus only on family outcomes. Others results (parents and children) are described and should be consulted in others publications. Overall statistically significant positive results ($p \leq .05$) were found for family, parents and children (for 16 or 76.2% of the 21 outcomes measured) using the standardized SFP instruments.

The examination of differential effectiveness of the SFP family changes showed that four of five variables for the Portuguese pre- to post test family outcomes were statistically significant according to the within-S ANOVA, except for family conflict. This area of change had the largest improvements in the effect sizes or amount of change (d) ranging from $d = .65$ for family communication and $d = .64$ for family strength and resilience and family cohesion ($d = .61$) to a low of $d = .00$ for family conflict.

Conclusions

One of the major goals of evidence-based researchers is to improve the wellbeing and quality of life of families worldwide. Also literature shows that because of the increased effectiveness of involving the total family, to change the family system, family interventions are very promising models for improving resilience and others social, behavioural and health outcomes for parents, children and adolescents (Kumpfer, Xie, & Hu, 2011). As it has been described in this paper, this can be achieved when using family evidence-based programs, such as SFP as a tool for strengthening families. Also the results showed above are encouraging, suggesting significant improvements specifically in family environment but also in others outcomes. Overall it is necessary to highlight the importance of family and to continue the

application of evidence-based family program as an intervention strategy to prevent children, parent and family risk factors and could contribute greatly to improving behavioural and health outcomes for children and youth worldwide.

Although should be taking into account the importance of cultural adaptations, as well as implementation and outcome evaluation of programs in different countries, cultures and new population (Ferrer-Weder, Sundell, & Mansoor, 2012) and should also involved controlled replication studies.

Hence, the use of family evidence-based program removes the need for local service providers to investigate develop and research culturally specific programs, as it can be adapted to meet local needs and cultural norms. This is also corroborated by an EMCDDA (2013) report that concluded that evidence-based family interventions from USA and Australia could be implemented successfully in non-English speaking cultures in Europe.

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