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Research Article

Assessing Efficacy of Music Therapy on Pre-Menstrual Syndrome's Severity of Symptoms

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Abstract

Introduction: Due to psychosomatic symptoms caused by Pre-Menstrual Syndrome (PMS) and its vexation among afflicted individuals; various therapeutic approaches have been postulated with respect to this syndrome. In current study, we explored the efficacy of Music-Therapy (MT) on reducing severity of symptoms of PMS.

Materials and Methods: In current study, 20 women with PMS were exposed to MT for three months (3 PMS cycle) and relevant data were recorded by Daily Records of Severity of Problems (DSRP) and Syndrome Check List 90-Revised (SCL90-R).

Results: Data were analyzed via Sample Kolmogorov-Smirnov test (K-S) and Repetitive measurement test. Results, were demonstrative of noticeable decrease in symptoms severity of PMS via MT. Furthermore, mental disorder during PMS via MT was less, comparing to the period before MT was conducted.

Conclusion: MT founded to be efficient with respect to reducing symptoms' severity of PMS and it appears plausible that it can be considered as one of the efficient methods regarding treatment of PMS.

Keywords: *Pre-Menstrual Syndrome (PMS); Music-Therapy (MT); SCL90-R (Syndrome Check List 90-Revised); Daily Records of Severity of Problems (DSRP)*

Introduction

Pre-Menstrual Syndrome (PMS) is considered as one of the most controversial clinical topics with respect to women [1]. Not astoundingly, it entails wide range of concepts and its spectrum of symptoms is noticed in a range from mild to severe [2,3]. For the first time in 1931, Rt-Frank coined this concept. He demonstrated elevated level of Epileptic occurrence among women with epilepsy during luteal period and not surprisingly their symptoms alleviated with bleeding occurrence [4,5]. This syndrome is characterized by psychological and physical discomforts, which occurs in luteal period of menstrual cycle, and it leads to vexation in normal functioning and interpersonal relationships of afflicted individuals [6]. By start of bleeding, symptoms tend to disappear and a period without symptoms is started [7]. Regarding this syndrome, 200 symptoms have been recognized, which can be categorized into two major subgroups: 1. Physical Symptoms 2. Psychological Symptoms. Physical symptoms such as Abdominal Cramp, Breast Sensitivity and pain, Joints and Muscles pain, Gaining Weight, Lack of Energy, Lethargy and Psychological Symptoms such as Vertigo, Insomnia are observable among afflicted individuals. PMS can adversely influence behavior and wellbeing of women and it dramatically impair their personal and general wellbeing [10,11].

PMS is accompanied with wide spectrum of behavioral alterations. These alterations involve tendency toward seclusion, withdrawal from job, reduced Function, alcohol abuse, withdrawal from social activities, crime related behaviors and suicidal tendencies [12,13]. Hence, impeccable timing regarding diagnosis or treatment tends to be irrefutable [14]. Although, PMS is considered as one of the most prevalent disorder in pregnancy ages, the exact prevalence is opaque due to wide controversy regarding exact definition and diagnosis criteria [15]. PMS can be noticed in various levels among 85 - 90% of women in their pregnancy ages [16]. Among afflicted individuals, 20 - 40% of them experience great deal of discomfort and this problem interferes with their daily functioning [17]. Various factors are considered influential in pathogenesis of this syndrome; hence, this syndrome is also named as multifactor syndrome [18]. Factors such hormonal alteration in level of Estrogen and Progesterone, elevated level of Prolactin, Vitamin and Mineral Deficiency, Organic Infection, Substance dependency, Seasonal alterations, Fluid incarceration, Low blood Glucose and Impaired Thyroid function can be named as factors regarding pathology of this syndrome. Currently role of dopamine and serotonin in pathology of this syndrome is bolder than other causes. However, exact cause of this syndrome is still in a state of great confusion [19-21]. Goal of treatment is mitigating the symptoms in way that patient can function accordingly during this period [15]. Therapeutic approach suggests that, initially all patients should be treated without drugs and via approaches, which are accompanied with less side effects; psychotropic approach should be followed with respect to individuals with resistant and pervasive symptoms [22]. In this sense, therapeutic approaches can be categorized as treatment with drugs, treatment approaches without drugs and Treatment via surgery. Regarding psychotropic approach, wide range of drugs such as SSRIs (Fluoxetine, Sertraline, Paroxetine) and SNRIs (Venlafaxine, Desvenlafaxine, Duloxetine) have been used [6]. Treatment approaches without drugs can be altering life style or changing diet [23], using herbs combination, essential counseling sessions, learning relaxation methods [25]. Suppressing function of Uterus and performing surgery (hysterectomy) will be proceed under circumstances, which former therapeutic approaches have failed and symptoms have caused detrimental influences on lifestyle and interpersonal relationships of afflicted individuals [6]. Nonetheless, regarding PMS there is no unified accepted therapeutic approach among clinicians [26]. Currently, non-pharmaceutical approaches are vastly used regarding this syndrome; one of these approaches is Music-Therapy (MT). American Music Therapy Association (AMTA) describes Music-Therapy as an approach toward maintaining, sustaining and enhancing physical and mental health status of individuals, which enables therapist to form favored alterations in patients' emotions and behavior in a clinical setting [27]. Synoptic review regarding history of human life is demonstrative of this fact; music as art, as communication method or even as therapeutic approach is as old as human kind existence [28]. Now days, in addition to pharmacotherapy and psychotherapy, MT is being used as an effective method in psychiatric settings regarding patients with various conditions [29]. MT entails various useful features and it has founded to be effective in treating various disorders such as anxiety [30], depression [31], mood treatment of neurotic patient [32], psychological hygiene and alleviating travail during natural childbirth [33] and other problematic conditions. By referring to relevant literatures and exploring valid databases, we couldn't find any similar studies, which had been conducted in Iran. In other countries, we founded 1 study, which was more less as same as current study. Viswanathan (2015) postulates that listening to meditational classic music dramatically can alleviate PMS symptoms. It appears plausible that due to prevalence of PMS and non-existence of efficient drug regarding this problem, current study was conducted in order to reach applicable, economical, safe and effective therapeutic approach with respect to mitigation of symptoms' severity of PMS.

Materials and Methods

Current study is quasi-experimental pre-post-test study. Statistical society of this study consisted of 20 individuals who were diagnosed by PMS. Sampling method was convenience sampling. In this sense, based on inclusion and exclusion criteria, women were chosen from individuals who referred to clinical center in Behshahr city (Mazandaran Province) and they were interviewed after they were diagnosed as having PMS. Subsequently, consent forms were obtained from patients and their demographic data (age, height, weight, marital status, educational level) were recorded. Inclusion criteria: Age range (20 - 35), BMI (18/5 - 27), regular menstruation, not using (nicotine, alcohol, pregnancy prevention medications, anticonvulsants drugs, antidepressants and vitamin) in past 3 months. Exclusion criteria: History of Mental/Somatic illness, gynecological diseases, breastfeeding, being under exposure of traumatic event in past 6 months. According to this criterion, 25 individuals were interviewed and 20 of them entered the study.

Procedure

Initially (before initiating the music therapy), date of menstruation of individuals was recorded based on their last period occurrence date and their own claim. SCL90-R was used, in order to assess all aspects of candidates' psychological health. Daily Records of Severity of Problems (DSRP) was handed out to participants and subsequently they were asked to record their severity of symptoms from bleeding date, until start of next period. This enabled us to assess PMS's severity of symptoms among all candidates. Furthermore, in this step (before initiating MT), SCL90-R was used again in second cycle of (one day before menstruation or first day of bleeding) in order to attain a measure for assessing level of psychological problems with respect to PMS. After this assessment, all participants were asked to listen to music (An instrumental classical music, which was specified by therapist) for 30 minutes in a morning and 30 minutes in the afternoon (1 hour daily) by headphone their preferred volume, during their next cycle after initiation of PMS symptoms, until termination of the symptoms and accordingly they were asked to complete Daily Records of Severity of Problems (DSRP) during this step. This method was followed by 3 cycles period and during this period therapist followed participants by telephone calls. Consequently, after three months, SCL90-R and Daily Records of Severity of Problems (DSRP) by the end of three periods of MT in order to assess the effect of MT on symptoms severity of PMS.

Tools

The Daily Record of Severity of Problems (DRSP) form was developed by Endicott and Colleagues (2015) in order to aid clinicians with respect to diagnosis and evaluation of DSM-IV Premenstrual Dysphoric Disorder (PMDD). The Daily Record of Severity of Problems (DRSP) is an instrument for daily collection of longitudinal symptom information. It includes 21 emotional and physical items grouped within 11 domains, each ranked from one to six and a revised version also includes three functional impairment items. The DRSP administered on the first day of menses can be a valid screening instrument to identify women who may have PMS/PMDD. The Medical Outcomes Study Short Form-36 (SF-36) is a validated HRQoL measure, assessing eight domains including physical, mental and social areas. It is used to assess overall health status, and offers the ability to compare data results with general and disease-specific population norms as well as outcome from treatments. The reliability and validity of the procedure was tested in two studies. Study A included 27 subjects who ranged from having few or no premenstrual problems to those who met criteria for PMDD. Study B included 243 subjects, all of whom met criteria for PMDD. Individual items and Summary Scores had high test-retest reliability in both studies. Internal consistency of Summary Scores was also high in both studies. Summary Scores had moderate to high correlations with other measures of severity of illness. In addition, items and summary scores have been shown to be sensitive to change and to treatment differences in Study B. The DRSP provides sensitive, reliable, and valid measures of the symptoms and impairment criteria for PMDD. According to Endicott and Colleagues (2015), reliability coefficients of total score of this scale in follicular and luteal phases are 0/98 and 0/99 respectively in two menstrual cycles. Furthermore, internal consistency coefficients total score in first cycle are 0/96 and 0/93 regarding follicular and luteal phases respectively and in second menstrual cycle are 0/96 and 0/95 with respect to follicular and luteal phases [35]. According to Izadi (2010), total score of internal consistency coefficient of DRSP in first menstrual cycle is 0/76 and 0/71 with respect to follicular and luteal phases respectively. Furthermore, total score of internal consistency coefficient of DRSP in second menstrual cycle is 0/81 and 0/79 with respect to follicular and luteal phases respectively [36]. With respect to assessing validity of this scale, Endicott and Colleagues (2015) used Social Adaptation Self-Evaluation Scale (SASS), Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q) and Hamilton Rating Scale for Depression (HRSD). Total correlation scores of DSRP with SASS, HRSD and DSRP are 0/038, 0/045 and 0/044 respectively [35]. Regarding assessing validity in Izadi's (2010) study, Beck Depression Inventory was used. Total correlation scores of BDI with DRSP total score, Depression subscale, Somatic symptoms and Anger/Irritation subscale founded to be 0/41, 0/61, 0/48 and 0/34 in meaningfulness level of $p < 0/001$.This can be demonstrative of acceptable validity of Persian form [36].

The Symptom Checklist-90-R (SCL-90-R) is a 90-item self-report symptom inventory developed by Leonard R. Derogatis in the mid 1970s to measure psychological symptoms and psychological distress. It is designed to be appropriate for use with individuals from the

community, as well as individuals with either medical or psychiatric conditions. The SCL-90-R assesses psychological distress in terms of nine primary symptom dimensions and three summary scores termed global scores. The principal symptom dimensions are labeled Somatization (SOM), Obsessive-Compulsive (OBS), Interpersonal Sensitivity (INT), Depression (DEP), Anxiety (ANX), Hostility (HOS), Phobic Anxiety (PHOB), Paranoid Ideation (PAR), and Psychoticism (PSY). The global measures are referred to as the Global Severity Index (GSI), the Positive Symptom Distress Index (PSDI), and the Positive Symptom Total (PST). According to Derogatis, internal consistency of this scale with respect to Depression and Psychosis are 0/95 and 0/77 respectively. In Iran, Mirzayee (1980) conducted a study regarding normalization of this form [37]. We used classical and non-vocal music in this study. We chose some parts from best hits of Mozart, Bach, Chopin and other classical masterpieces [38].

Results

Mean age of women in this study was 27 with standard deviation of 4/53. Furthermore, youngest women in this study were 20 and oldest was 34 years old. BMI mean of participants was 23/35 with standard deviation of 2/13. Figure 1 has demonstrated number of women in this study according to duration of their PMS. Duration of PMS are as mentioned below: 5 women (4 days), 3 women (7 days), 2 women (3 days), 2 women (5 days), 1 woman (6 days), 1 woman (8 days), 1 woman (11 days), 1 woman (12 days), 1 woman (13 days), 1 woman (14 days).

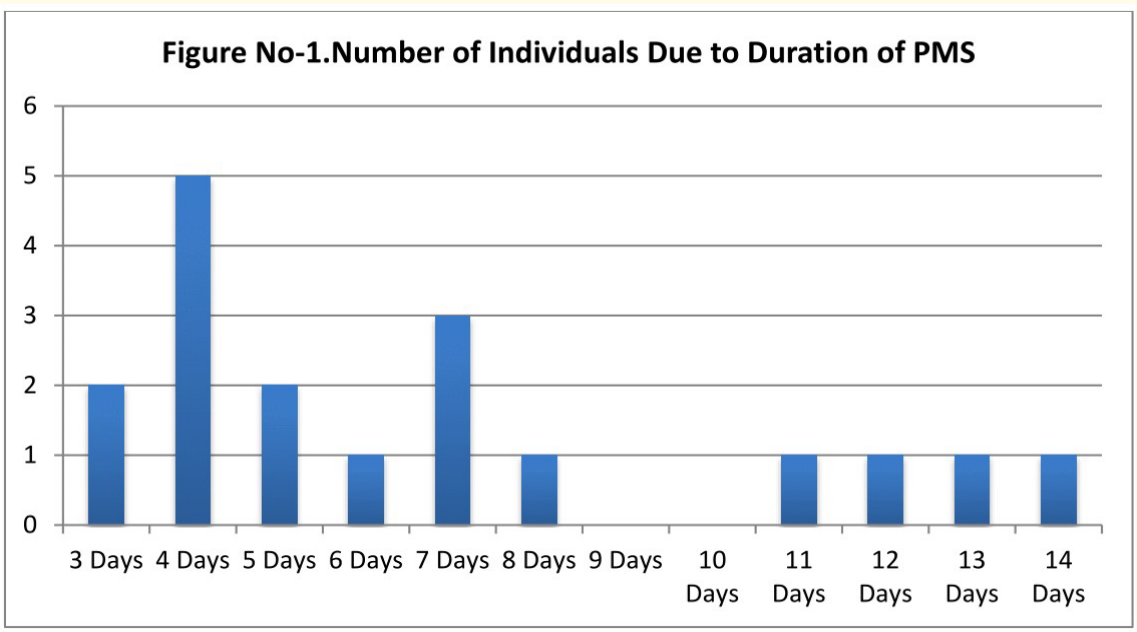

Figure 1: *Number of Individuals Due to Duration of PMS.*

As it can be noticed from Figure 2, Trend of Maximum Severity of PMS's Symptoms is anticlimactic in a course of treatment.

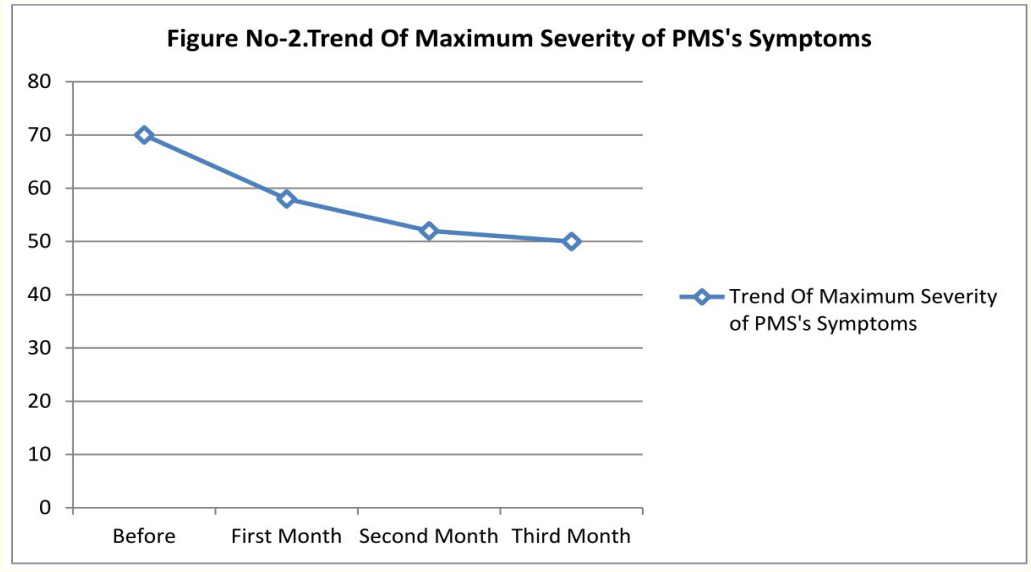

Figure 2: *Trend of Maximum Severity of PMS's Symptoms.*

As it can be inferred from Figure 3, severity of symptoms has been alleviated comparing to severity of symptoms before MT.

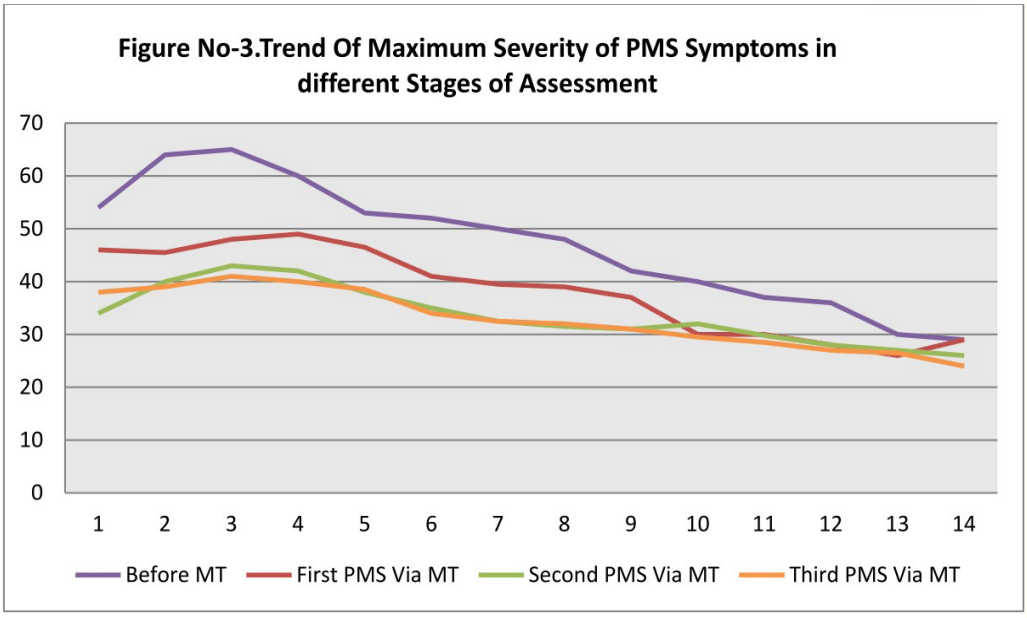

Figure 3: *Trend of Maximum Severity of PMS Symptoms in different Stages of Assessment.*

Via Kolmogorov-Smirnov test (K-S), it was concluded that with significance level is less more than 0.05 variables of this study are normal. Hence, with respect to statistical test we used repetitive measurement test in order to compare the difference of syndrome's variables and severity of PMS. Repetitive measurement test was demonstrative of meaningful difference between mean of syndrome's symptoms and mean of disorder scores in different stages of assessment. As it can be mentioned in table 1, there is meaningful statistical difference between mean of syndrome's symptoms in Primary assessment (Before MT) and after initiating MT and there is noticeable decrease in symptoms after conducting MT. With respect to significance level less than 0/05, impact of Time is meaningful and MT has caused decrease in syndrome's symptoms.

PMS	Mean	SD	Sig
Primary Assessment Before MT	86/59	17/11	**0/000**
Assessment During PMS Period Via MT	90/45	26/10	
Assessment After Final PMS Period Via MT	26/39	89/6	

Table 1: *PMS Symptoms in different Stages.*

In table 2, descriptive indicators of SCL-90R subscales such as mean, SD and General Severity Index (GSI) in different stages can be noticed.

Time / Subscales		Somatization	Obsessive-Compulsive Disorder	Interpersonal Sensitivity	Depression	Anxiety	Hostility	Phobic Anxiety	Paranoid Ideation	Psychoticism	GSI
1-Before MT	Mean	10/1	097/0	88/0	98/0	95/0	79/0	49/0	10/1	52/0	88/0
	SD	71/0	74/0	65/0	59/0	65/0	74/0	47/0	77/0	55/0	58/0
2-VIA MT	Mean	59/1	36/1	22/1	34/1	32/1	15/1	65/0	37/1	78/0	27/1
	SD	63/0	72/0	59/0	71/0	70/0	68/0	70/0	68/0	52/0	53/0
3-VIA MT	Mean	92/0	71/0	63/0	73/0	84/0	60/0	35/0	97/0	33/0	59/0
	SD	60/0	65/0	41/0	48/0	57/0	52/0	38/0	65/0	29/0	53/0

Table 2: *Assessment of SCL-90R Subscales in Three Stages.*

Table 3 is demonstrative of General Indexes of SCL-90R such as mean, SD in three times assessment.

SCL-90R	Mean	SD	N
Primary Assessment Before MT	89/0	55/0	20
Assessment During PMS Period Via MT	19/1	51/0	20
Assessment After Final PMS Period Via MT	67/0	41/0	20

Table 3: *Assessment of SCL-90R in Three Stages.*

Table 4 is illustrating paired comparison of means of PMS in different stages of assessment. This table is discussing means of PMS in different stages of assessment. With respect to this test and with significance level less than 0/05, there is a meaningful difference regarding mean score of PMS in Stage 3 (After MT) comparing to stages 1(Before MT) and 2(While conducting MT). Thus, it can be concluded that mean score of PMS in Stage 3 is less than former stages (1,2) and it is plausible that MT have resulted in decreased PMS's symptoms.

(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[a]
1	2	-.305*	.095	.005
	3	.221*	.082	.015
2	1	.305*	.095	.005
	3	.526*	.113	.000
3	1	-.221*	.082	.015
	2	-.526*	.113	.000

Table 4: *Comparing Paired Means of Disorder in Different Stages.*

Discussion

PMS is one of the most prevalent problems among women. Thus, following appropriate therapeutic procedure, which maintains less side-effects and efficacy, tend to reduce costs of treatment. Since most of PMS patients don't respond to common treatments, finding new solutions regarding this problem seems to be inevitable. Complementary and Integrative medicine is one the areas which is expanding at a fast pace among clinicians. Goal of current study is assessing efficacy of Music-Therapy (MT) in alleviating severity of symptoms among patients with PMS. Results are demonstrative of alleviating effect of MT on reducing severity symptoms of PMS. Furthermore, level of psychological problems during PMS had meaningful drop. It is worth mentioning that in Iran there is no comparable study in this respect and in other countries we could find only one study consistent with subject of current study. Results of the Study conducted by Viswanathan (2015) confirm the results of currents study, which is efficacy of MT on alleviating symptoms of PMS [34]. Varied studies have been conducted regarding PMS, one worth mentioning is a study conducted by Maratos and Colleagues (2008). In their study, they showed that MT can reduce symptoms of depression [39]. Pelletie (2004), concluded that MT can reduce tension by the time of stress [40]. In a study conducted by Raglio and Colleagues (2015), they assessed efficacy of MT on mood among neurological patients and the concluded that MT has major therapeutic impact on mood of these patients [32]. Simavli and Colleagues (2014) showed that using MT during natural labor can reduce pain and anxiety among mothers [33]. Musical Therapy Association of America (MTAA) offers MT as positive tool in targeting stressful situations [27]. Current study also highlights the role of MT as effective therapeutic approach.

Conclusion

Music can be considered as one of the effective tool regarding alleviating unfavorable symptoms in PMS. MT as Complementary and Integrative medicine is non-pharmacologic, cheap and accessible approach, which can be used by gynecologists, midwiferies. Further studies should be conducted with respect to efficacy of MT and other disorders.

Authors' Contributions

Authors' contributions SN and JS conceived and designed the evaluation and they conducted whole process of this study. MBM collected and interpreted the clinical data and drafted the manuscript. ST Participated in conducting statistical evaluation. All authors read and approved the final manuscript. This paper was derived and inspired from master dissertation number 20820701932062.

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Declaration of Interest

None declared.

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