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Communication patterns and stress in the preschool: an observational study

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Abstract

The study included twelve preschool departments, with two teachers at six departments, characterized by high levels of stress and burnout and two teachers at six departments characterized by low levels of stress and burnout. A total of 24 females with a mean age of 43.5 years participated in the study. The teachers rated stress, fatigue and work demands at work burnout by use of different questionnaires. Cortisol samples were collected at wake up, one hour after wake up, at 11:00 am and at 09:00 pm. An observation study was conducted to create an overview of the communications patterns between the children and the personnel during different time periods. Significant differences between the two groups of teachers were observed regarding the organization of the work and family situation. The high stress teachers had more communications from colleagues than low stress teachers, spent more time on pedagogical planning and had young children at home. These results support the view that the organization is a central factor regarding experienced stress by preschool teachers.

Keywords: preschool, stress, communication, organization

Introduction

Studies of the working environment in preschools often focuses on the sound level and its effect on hearing related ill health (Grebennikov, 2006; Sjödin, Kjellberg, Knutsson, Lindberg, & Landström, 2012). Besides the hearing impairment, focus is gradually shifting towards investigating the psychological effects of exposures in terms of stress reactions (Baumgartner, Carson, Apavaloaie, & Tsouloupas, 2009; Sjodin, Kjellberg, Knutsson, Landstrom, & Lindberg, 2012). Swedish statistics regarding risk factors for long term sick leave (more than 90 day) due to psychological ill health (depression, severe stress reactions, anxiety and burnout) shows that preschool teachers have the fourth highest risk factor (8.0 of 1000 employees) of all professions. Only various healthcare services (11.5 of 1000), assistant nurses and ambulance drivers (9.3 of 1000) and various industrial work (8.1 per 1000) have higher risks in Sweden (AFA-Insurance, 2014).

Stress is a response to the psychological or physical demands that are imposed on an individual and leads to an activation of the hypothalamic-pituitary-axis, which results in an increased secretion of cortisol from the adrenal cortex. A cortisol concentration in the saliva steeply normally increases in the morning after awakening, known as the Cortisol Awakening Response (CAR) (Clow, Thorn, Evans, & Hucklebridge, 2004; Lundberg, 1999; Nader, Chrousos, & Kino, 2010). Beside using a high CAR as an indicator of stress related symptoms, Cortisol Decline over the Day (CDD) is also commonly analyzed and low CDD, illustrating a flattened cortisol curve may indicate that individual is put under long term stress (Rosmond, Dallman, & Bjorntorp, 1998). It has also been shown that women suffering from burnout have increased levels of cortisol in the morning compared to healthy women (Grossi et al., 2005). Furthermore, high levels of cortisol in the morning may be associated with poor recovery after work (de Schipper, Riksen-Walraven, Geurts, & de Weerth, 2009; Gustafsson, Lindfors, Lundberg, & Aronsson, 2006). However; research has shown inconclusive results regarding stress and cortisol levels among preschool teachers (de Schipper et al., 2009; Groeneveld, Vermeer, van Ijzendoorn, & Linting, 2012; Sjodin et al., 2012).

Stress activation is normally not harmful to the individual as long as the individual is given the opportunity to rest and recover. Aronson (Aronsson, Svensson, & Gustafsson, 2003) showed that about 20 % of the high school and compulsory school teachers in Sweden did not recuperate enough during spare time and that they also reported more ill health. Long term stress may lead to fatigue, depression, sleep difficulties, hypertension and increased risk for myocardial infarction (Akerstedt, 2006; Melamed, Shirom, Toker, Berliner, & Shapira, 2006; Stansfeld, Haines, Burr, Berry, & Lercher, 2000; Åhsberg, 2000). Disturbances in recovery after work have therefore become an important indicator of stress-related ill health. Traditionally the home domain has been a place for recuperation but the increased demands at work may be in conflict with the family life. Greenhaus (Greenhaus & Beutell, 1985) stated that the family and work domain to some extent are incompatible with each other and that a high load in one domain affects the other domain. Research has shown that employees who perceive their employer as a family supportive organization experience a more positive mood, have a higher sense of

fulfillment at work and job satisfaction, which in turn has positive spillover effects in the family domain (Cook, 2009; Haar & Roche, 2010; Wayne, Casper, Matthews, & Allen, 2013). Research has also showed that having preschool-aged children is associated with fewer working hours among lawyers (Wallace, 1997). This may indicate that having younger children at home increase the demands on the family domain which may in turn affect the work life domain, however the causality has not been fully clarified. Having younger children in the household is time consuming and in general there have been a changes in how much time parents spend with their children. Dubas & Gerris (1995) showed that there was a trend towards an increase in parent-child time between 1990 and 1995. Noteworthy was that mothers spent the most time with the children compared to the fathers. Mothers were also more engaged in activities when they were actively doing something with the children, especially when having younger children.

Research has also shown that teachers in the preschool are exposed to multiple stressors that occur simultaneously thus creating a difficult working environment (Baumgartner et al., 2009). Studies have also shown that there may be several different sources of stress such as time pressure, non-teaching tasks, parental issues, interpersonal relationships etc. (Hall-Kenyon, Bullough, MacKay, & Marshall, 2013). Preschool teachers' often have little or no time to attend non-teaching tasks, meetings, administration or pedagogical development. These tasks are therefore often conducted out of school hours, thus increasing the overall demands at work (Kelly & Berthelsen, 1995).

Work demands in relation to the individual's capacity, the possibilities to get help when problems are encountered and the consequences of failure are major factors determining acute and long term stress responses. Work demands are not only determined by the work task but also of factors that make the performance more difficult or easy to carry out, e.g. factors like temperature, organization of the work and noise. In addition, the reactions to the work demands differ depending on a number of individual stable and temporary characteristics (Ellis, Jackson, & Boyce, 2006). Preschool teachers, reporting high work load, has been shown to provide lower quality care of the children. This suggesting that an improvement of the working conditions may lead to a higher quality care giving (de Schipper, Riksen-Walraven, & Geurts, 2007). In a review by Dunn (Dunn, 1993) smaller classes were also associated with better caregiving and less harsh behavior from the teachers. The teachers were also more prone to interact with the children in instead of just monitor the children.

High psychological demands in combination with a low degree of decision latitude (control) may lead to physiological distress according to the demand-control model proposed by Karasek (R. Karasek & Theorell, 1990). A higher degree of control allows the individual to cope with higher demands without a risk of unwanted health effects. Santavirta (Santavirta, Solovieva, & Theorell, 2007) showed using the work demand-control model that burnout among Finnish teachers was associated with high demands, whereas the association between low control and burnout was weaker. Burnout, often the result of long term stress, has also been shown to be widespread among teachers (Hakanen, Bakker, & Jokisaari, 2011). Furthermore; Magnusson (Magnusson Hanson, Theorell, Oxenstierna, Hyde, & Westerlund, 2008) also showed an

association between emotional exhaustion, high demands and lower control. Other studies have shown that the interpersonal relationships is of high importance for the teachers' perceived control (Hammarberg & Hagekull, 2000).

The preschool in Sweden has undergone extensive organizational changes during the last years. Focus has shifted from being a provider of quality care for the children to becoming more of a teaching environment with different pedagogic aims (the Swedish National Agency for Education, 2010). The quality of the provided education and the curriculum of each preschool is monitored by the Swedish School Inspectorate. Besides the shift to focus on learning, the child/teacher ratio has decreased and the size of the child groups has also increased since the early 90's (the Swedish National Agency for Education, 2014).

The combination of more children per teacher will most likely also increase the communication and the social interaction between the teachers and the children in the daily work. Hagekull (Hagekull & Hammarberg, 2004) showed in a study from Swedish preschools that the number of interactions initiated by children towards the teachers were increased with a lower teacher/child ratio. The number of interactions regarding on-task support for the children from the teachers were also lower in classes with more children. Interestingly, at the same time these interactions with the children also seems to be a major source contributing to the overall job satisfaction among teachers (Hall-Kenyon et al., 2013). Gest (Gest, Holland-Coviello, Welsh, Eicher-Catt, & Gill, 2006) showed that teachers communicated with the children about 10-12 times per minute in average and that these interactions may vary depending on the context. In their study they also concluded that a high rate of teacher talk in the classrooms could result in an insensitive classroom, not giving the children room to speak. The preschool environment is an important context for the children's linguistic skills development and the preschool offers many different situations where the children can experiment with their language and thus improve their conversational competence (Majorano, Cigala, & Corsano, 2009).

The present study focuses on the role of the work environment in terms of organization of the work and social interactions but also individual differences in Swedish preschool teachers regarding their perceived stress at work. Areas of interests in this study concerns whether highly stressed teachers differs from low stress teachers with regards to individual characteristics, experienced work load, fatigue, recuperation, the way they organize their daily work and their communication patterns.

The general aim of the study is to identify and analyze individual and work related factors that differs between preschools teachers characterized by high or low levels of stress.

The specific questions to investigated are:

- 1) Do high and low stress teachers differ regarding experienced work demand, occupational fatigue and recuperation?
- 2) Do high and low stress teachers differ in number of communications interactions to and from colleagues and children at the department?
- 3) Which factors affect the experienced stress among teachers in the Swedish preschool?

Methods

Participants

The design of the study is a nested case-referent study. This study is an extension of a previous study (Sjödín et al., 2012; Sjödín et al., 2012) conducted by the research group and participants for the current study were recruited from this previous study.

From the original study, four departments (three teachers at each department) characterized by having a high average degree of stress and four departments (three teachers at each department) characterized by having a low average level of stress were invited to participate.

The evaluation of a department's average stress level was made by use of the participant's stress score on the Stress-Energy questionnaire (Kjellberg & Wadman, 2002), from the previous study (Sjödín et al., 2012; Sjödín et al., 2012), see methods section for further information regarding this questionnaire.

The department with the highest average stress level was first invited to participate in the present study under the condition that at least two of the teachers who participated in the earlier study would be able to participate. If this criterion could not be met or the department declined to participate for other reasons the department with the closest average stress score was invited. A similar procedure was used when including the low stress departments. The aim was to include four departments characterized by low levels of stress and four departments with high levels of stress.

A total of 24 females with a mean age of 43.5years (SD 9.9 years) participated in the study. On average, the participants had been preschool teachers for 15.3 years (SD 9.2). No participant currently worked as a substitute teacher and all worked full time (40 hour work week). 37.5% of the teachers worked as preschool teachers (having at least three years of university education) and 62.5% as childcare workers (no university education). The majority of the participants were married or lived with a partner (87.5%), whereas three participants lived alone (12.5%). About half (54%) had no children or children that did not live in their household. Among the

participants with children in the household, 46% had one child, 46% had two children and 8% had three children.

The Stress-Energy questionnaire (Kjellberg & Wadman, 2002) was once again used in the present study to construct the high and low stress groups used for the statistical analyses. The questionnaire was filled out by the teachers in the middle of the work week.

The score 2.4 on the questionnaires stress scale was used as a cutoff point to divide the participants into a high or low stress group. This value is considered to be the neutral point on the stress scale (Åhsberg, 2000; Åhsberg, Gamberale, & Kjellberg, 1997). One of the teachers previously characterized by having a high level of stress in the previous study scored lower than 2.4 in the present study. Hence, 13 teachers in the present study were thus assigned to the low stress group and 11 teachers were assigned to the high stress group.

An overview of descriptive data for the two stress groups in the present study is given in Table 1. Significantly more teachers lived in a household with children ($P < .05$) in the high stress group. No other significant differences were seen regarding the demographic data for the two stress groups.

Questionnaires

Data regarding age, position at work, living conditions and number of children in the household was collected through use of questionnaires. The teachers were also asked about time in percentage they spend on different tasks in their daily work.

The Stress-Energy model (Kjellberg & Wadman, 2002) was used to evaluate the subjective stress levels and the energy experienced by the personnel at 11 am on Wednesday during the data collection week. The model is based on a questionnaire with 12 items measuring Stress and Energy with a scale 0 = not at all, 1 = hardly any, 2 = to a little degree, 3 = to some degree, 4 = to a high degree, 5 = to a very high degree (Eklöf, Ingelgård, & Hagberg, 2004; Norlander, Johansson, & Bood, 2005; Persson, Garde, Hansen, Ørbæk, & Ohlsson, 2003; Wadman & Kjellberg, 2007).

Subjective fatigue was evaluated in conjunction with the Stress-Energy questionnaire using the Swedish Occupational Fatigue Inventory method (SOFI) (Åhsberg, 2000; Åhsberg et al., 1997). The SOFI questionnaire measures five different dimensions of fatigue: lack of energy; physical exertion; physical discomfort; lack of motivation and sleepiness. The questionnaire uses a six steps graded scale (0 = not at all, 1 = hardly any, 2 = to a little degree, 3 = to some degree, 4 = to a high degree, 5 = to a very high degree).

To analyze the psychosocial working conditions the Demand/Control Model developed by Karasek and Theorell (R. Karasek & Theorell, 1990) was used. The model evaluates the

relationship between subjectively experienced demands and control at work. The Job Demand - Control Model (R Karasek et al., 1998) is based on eleven items using a four step scale (1 = No, almost never; 2 = No, rarely; 3 = Yes, sometimes; 4 = Yes, often). A mean rating of the first five items gives the Demand score. The mean score of the remaining six items constitutes the Control score.

Sleep quality was assessed by use of the Karolinska Sleep scale (KSS) (Akerstedt, Hume, Minors, & Waterhouse, 1994). All participants answered the KSS questionnaire on Tuesday, Wednesday and Thursday during the study week. The KSS questionnaire evaluates sleepiness at bed time and at time of wakeup. The scale used, is a nine point scale with verbal anchors on odd numbers: 1= very alert, 3 = alert, 5 = neither alert nor sleepy, 7 = sleepy, but with no difficulty staying awake and 9 = very sleepy, fighting against sleep, requiring great effort to stay awake.

Saliva Cortisol

Cortisol was collected using Salivette® sampling kits by Nümbrecht, Germany, during Wednesday. Four samples were collected during the same day, at wake up, one hour after wake up, at 11:00 am and at 09:00 pm. The samples collected at home were brought to the preschool and stored in a refrigerator. All samples were collected in the end of the study week by the project group and stored in a freezer at -20 Celsius until analyzed at the department for Clinical Chemistry at Linköping University. The analyses were based on Enzyme Immunoassay (EIA) analyses with a range between 0.3 – 800 nmol/L.

Cortisol Awakening Response (CAR) was calculated using the difference in cortisol value between the first and second sample in the morning. The second sample in the morning has normally the highest value during the day. Cortisol Decline over Day (CDD) was also calculated using the highest cortisol value in the morning (usually the second sample) and the last cortisol sample value in the evening (9:00 pm).

Observations

The aim of the observation was to create an overview of the communication pattern between the children and the personnel. An observation study was conducted at each participating department. The observer who was a research engineer and a member of the research team conducted all observations. The observer was not informed about which group an observed teacher belonged to. .

The observer used a protocol and was instructed to count the number of communication attempts made to and from the observed teacher. The observer counted the number of times the following variables occurred during the observation period: communication from the teacher to the children, communication from the children to the observed teacher, communication from the observed teacher to colleagues, communication from colleagues to the observed teacher,

number of quick checks (visual control) of what the children were doing and problematic situations (crying children, obstructing children or fighting children. The content or duration of the communication was not registered.

The observation was divided into two time periods. The first time period ranged from 10:00 am to 11:00 am and the second time period was from 11:00 am to 11:30 a. The first time period was selected with an aim to cover regular pedagogical activities such as free play and gatherings of the child group. The second time period was selected with an aim to coincide with eating activities that occurs usually three times per day in the preschool (morning meal about 9:00 am, lunch 11:00 am, afternoon meal 2:00 pm).

The observer arrived about 30 minutes before the start of the first observation period in order for the observer to gain acquaintance with the children and the teachers. Only one teacher was observed during one work day.

After the observation the observed teacher was asked questions regarding whether the behavior of the children was different due to the presence of the observer. The behavior of the children were rated on a five graded scale (1 = no difference, 2 = yes, the children were more calm than usual, 3 = yes, the children were much more calm than usual, 4 = yes, they were more excited than usual, 5 = yes, they were much more excited than usual). The teachers were also asked whether they thought that the observation period was representative for an ordinary work day using a one to five scale (1 = yes, 2 = no, today was a little more calmer than ordinarily, 3 = no, today was much more calmer than ordinarily, 4 = no, today was a little more stressful than ordinarily, 5 = no today was much more stressful than ordinary).

Statistical methods

All analyzes were made using IBM SPSS version 21. The study data was not normally distributed. Comparisons of means were analyzed using Mann-U Whitney tests. Multiple regression analyses were made to analyze the observed variance in rated stress.

Ethics

The regional ethical review board has approved the study (2008/273). All participants were informed in verbal and written form about the purpose of the study. The participants were informed that their participation in the study was strictly voluntarily and that they were allowed to end their participation at any time with no explanations needed. All participants were informed that all data would be presented group wise and that no individual data would be presented.

Results

Group differences

Work factors

Time spent on different work tasks were estimated in terms of percent of their working time. The majority of work carried out was working with the children (Table 2). Time for planning was the second most common work task. No significant group differences were observed except for estimated time working with the planning of the pedagogic course plan. The high stress group reported spending more time doing this ($P < .05$).

Communication

As can be seen in Table 3 the high stress group of teachers had more communications to and from the children, both before lunch and during lunch. The difference between the two groups was however not significant. The communication to and from the colleagues showed that high stress teachers were significantly more often contacted by their colleagues compared to the low stress teachers before lunch ($P < .05$). No significant differences were seen regarding quick checks of the children or number of problematic situations for any of the observation periods.

Fatigue at work, demands and stress.

Descriptive data regarding different health aspects of the teachers in the two stress groups are given in Table 4 as well as the Stress value used for the creating the low and high stress group. The high stress group generally rated most of the health questions and work conditions as worse compared to the low stress group. However, as shown in Table 4, the difference was only significant for lack of energy and higher sleepiness at work.

Differences in cortisol was analyzed by comparing the low stress group with the high stress group. No significant differences were seen for any of the analyzed cortisol variables shown in Table 5.

Perceived stress

The analyses regarding demographic data, work factors and communication patterns revealed statistical significant differences between the high and low stress groups regarding having children at home, time for pedagogical planning and communication patterns from colleagues. These variables were analyzed in a multiple regression model, see table 6. The analyses showed that model 1 explained about 29 % of the variance for the teacher's perceived stress. However; planning and communication were not statically significant in the model. Model 2 showed that the variable having children at home, alone, explained about 17 % of the variance regarding perceived stress.

Discussion

The aim of the study was to analyze individual and work related factors between preschool teachers characterized by high or low levels of stress. Specifically; we were interested in investigating to what extent perceived work demand, occupational fatigue and recuperation is

associated with stress among preschool teachers. The aim was also to investigate whether there was an association between perceived stress and the number of communication interactions that occur between the teachers themselves and between the teachers and the children.

Our hypothesis was that high stress teachers would differ in perceived work load, occupational fatigue, recuperation, cortisol levels and number of communications interactions compared to low stress teachers.

Hensley (Hensley, 2002) stated that younger and less experienced teachers experienced their working situation as more difficult compared to older teachers. This is explained by the lack of experience while still facing the same demands at work. However, in contrast, Hammarberg and Hagekull (Hammarberg & Hagekull, 2000) showed that experience is not that relevant, at least regarding the teachers' perceived control at work. In the present study, with a focus on work related stress, no age differences were observed between the high and low stress teachers, which could be expected considering Hammarbergs findings.

An important and often discussed factor regarding the actual working conditions is the size of the child group. Dunn (Dunn, 1993) showed that the group size is an important factor for both the development of the children as well as preschool teachers' possibilities to carry out their daily work. The perceived stress among teachers in classes with less children would thus be expected to be lower. However, in this study no such association between class size and stress was found.

By comparing the high stress and low stress teachers, this study indicates that the organization of the work differs to some extent between the two groups. The teachers with high stress estimate that they spend 3% more time on planning the pedagogic work resulting in less time actually working with the children compared to the low stress teachers. This may indicate that the high stress teachers to higher extent experience a need to provide well-planned pedagogic activities for the children. It may also indicate that the high stress teachers also to a larger extent have responsibility for the planning of the work being carried out at the department. This conclusion is partly supported by the observation study that was carried out in this study. The observation study revealed that that the high stress teachers had colleagues that more often sought contact may imply that their colleagues rely on them in the daily work. This in turn may increase their perceived stress, but may also have a negative effect on their energy and fatigue at work as the results also show.

Significantly more participants in the high stress group had children living at home which may indicate that the combination of work as a preschool teacher and having young children at home is troublesome; perhaps also contributing to the lack of energy and sleepiness due to poorer recuperation at home.

In general the data suggests that highly stressed preschool teachers are characterized by taking a larger responsibility at work. This is shown by the more time spent on pedagogical planning and the higher number of contacts made by their colleagues. The high stress teachers also combine motherhood and family with work which emphasize the need of social and logistical support for combining work and family life. This conclusion is partly supported by the linear regression analyses which suggest that about one third of the variance predicting perceived stress among the preschool teachers are explained by these factors. Kelly (Kelly & Berthelsen, 1995) has suggested that the organization of work in terms of pedagogical planning and staff meetings out of schools hours needs to be considered to reduce the strains of combining family with work.

This study mainly focuses on subjective work related stress factors; however, saliva cortisol levels were collected as a measure of objective stress levels. No statistically significant results were found between the two groups, but the data did reveal some trends. The high stress group had lower cortisol levels at wake up and a higher CAR, which is in line with previous research. Pruessner (Pruessner, Hellhammer, & Kirschbaum, 1999) showed that teachers experiencing high stress had a higher cortisol level increase in the morning compared to teachers experiencing lower stress. Teachers with a high degree of burnout also had a lower overall cortisol secretion. However, Grossi (Grossi et al., 2005) found that women suffering from burnout had higher levels of cortisol in the morning in contrast to Pruessner's findings.

There was also a tendency that the high stress group having a lower CDD which indicates a lower cortisol variability over the day. Again, while not statistically significant the result is in line with previous research which has shown that among exhausted individuals, cortisol variability is low (Lindeberg, Ostergren, & Lindbladh, 2006). In a review of studies investigating work-related stress using cortisol as a bio maker, a conclusion was made that there are no consistent support that cortisol is an important mechanism in the development of disorders related to psychosocial working conditions (Karlson, Eek, Hansen, Garde, & Ørbæk, 2010).

The current study should be considered in the perspective of the limited number of subjects participating in the study and the cross-sectional design. The statistical power in the comparisons between high stress and low stress teachers was low and the results should be interpreted with caution.

Furthermore, the two observation periods for each teacher were made on the same day and the chosen day may not have been representative of a typical working day for some of the teachers. However, several procedures were adopted to ensure that the day of observation was as typical as possible. The chosen day for observation was scheduled in agreement with each teacher to avoid unusual pedagogical activities or a high absence of children at the department. Further, all teachers stated in the observation questionnaire that they considered the observed time period as representative for a typical working day.

As with all observation designs, there is a risk that the presence of the observer may have influenced behavior. This was also controlled for by a question asked after each observation period. No teachers reported that the observer had an impact on the children's behavior.

Overall, the results from this study are in line with other studies showing that work environment of preschool teachers and child care workers is characterized by a high work load and high stress (Grebennikov & Wiggins, 2006). The study verifies the central role work organization has in how health or ill health will develop, as well as how factors outside the workplace also differ among low and high stress teachers. Future studies should include a deeper look into how factors outside work may affect perceived stress at work for preschool teachers and in particular the dynamic between working and having children living at home.

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Table 1.

Demographic data and mean values of number of children and year in occupation separated by low and high stress teachers.

	Low stress (n=13)	High stress (n=11)	P
Mean years of age	45.2	43.5	.400
Mean years in occupation	15.3	15.2	.931
Mean number of children in the child group	19.4	18.7	.595
Married or cohabiting	85.0 %	91.0 %	.649
Children living at home	30.0 %	70.0 %	.049 *

*, $P < .05$

Table 2.

Time estimated (in percent) by the personnel spent doing different work task.

	Low Stress	High Stress	<i>P</i>
Work with the children	81.8%	76.5%	.148
Planning of the pedagogic course plan	5.0 %	8.0 %	.042 *
Administrative work	4.9 %	6.1 %	.483
Contacts with parents	4.2 %	5.0 %	.563
Competence development	1.5 %	1.5 %	.693
Other work tasks (cleaning etc.)	2.5 %	2.9 %	.832
Total	100.0%	100.00%	

*, $P < .05$

Table 3.

Mean number of contacts and situations separated by high stress and low stress for the two observations periods.

	Before lunch (60 min observation)			Lunch serving (30 min observation)		
	Low Stress n=13	High stress n=11	P	Low Stress n=13	High stress n=11	P
Teacher --> Children	36.1	37.7	.93	33.2	41.0	.31
Children --> Teacher	24.5	29.0	.51	19.1	21.7	.91
Teacher --> Colleague	5.5	4.9	.55	3.3	3.6	.21
Colleague --> Teacher	7.1	11.2	.05*	2.8	3.9	.77
Quick Check of the children	13.2	13.3	.93	1.0	1.3	.77
Problematic situation	1.6	2.0	.51	4.4	4.9	.32

*, $p < .05$

Table 4.

Group differences between low stress group and high stress group regarding aspects of different health indicators.

	Low stress group (n=13)		High Stress group (n=11)		<i>P</i>
	Mean	SD	Mean	SD	
Stress – Energy Questionnaire	1.50	0.50	3.26	0.55	.00 **
SOFI Lack of Energy	1.54	0.64	2.41	0.63	.01 *
SOFI physical discomfort	0.35	0.50	0.64	0.42	.07
SOFI Lack of motivation	0.37	0.52	0.45	0.62	.73
SOFI Sleepiness	0.54	0.64	1.41	0.63	.01 **
Work demands	2.97	0.35	3.05	0.28	.61
Work control	3.59	0.28	3.42	0.23	.11
KSS at bedtime	6.58	0.97	7.00	1.65	.23
KSS at wakeup	6.36	1.48	6.79	1.51	.57

*, $P < .05$. **, $P < .01$

Table 5.

Group differences between low stress group and high stress group regarding cortisol levels at different time points, as well as CAR and CDD.

	Low stress group (n=13)		High Stress group (n=11)		
	Mean	SD	Mean	SD	<i>P</i>
Cortisol (wakeup)	12.70	6.84	8.53	4.31	.13
Cortisol (1h after wake up)	15.12	4.82	15.44	4.14	.73
Cortisol (midday)	4.07	0.83	3.81	1.59	.28
Cortisol (21 pm)	1.63	0.39	1.98	0.76	.23
CAR	2.42	7.03	6.91	7.64	.17
CDD	12.25	6.27	8.25	3.86	.12

*.*P* < .05

Table 6.

Summary of the multiple regression analysis predicting perceived stress for all teachers including the variables having young children at home (Children) time for pedagogical planning (planning) and Communication from colleagues (communication).

	Model 1 (Adj R ² = .294)			Model 2 (Adj R ² = .167)		
	<i>B</i>	<i>t</i>	<i>P</i>	<i>B</i>	<i>t</i>	<i>P</i>
Children	-.45	-2.52	.02	-.45	-2.33	.03
Planning	.46	.135	.19			
Communication	.47	1.37	.19			