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1 **Perceived challenges of working in a fertility clinic: A qualitative analysis of work stressors**
2 **and difficulties working with patients**
3

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16 **Running title:** Challenges of working in fertility clinics
17

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22
23

24 **Keywords:** occupational stress, healthcare professional, fertility, patient complexity,
25 communication
26

27 **Abstract**

28 **Study question:** What are some of the challenges of working in a fertility clinic?

29 **Summary answer:** The most frequently mentioned challenges were workload (e.g., high time
30 pressure) and patient-related sources (e.g., unrealistic expectations).

31 **What is known already:** One study showed a too high workload, worry about handling human
32 material and low success rates were main stressors in fertility clinics.

33 **Study design, size, duration:** An online open-ended survey inviting participants to respond to
34 seven questions was distributed to 5902 members of the European Society for Human
35 Reproduction & Embryology (ESHRE, October 2010). Questions asked participants to describe
36 the top three factors that made (1) their work stressful (hereafter “Work stressors”) and (2)
37 working with patients difficult (hereafter “Perceived sources of difficulties”), and (3) to choose
38 from these factors which top three issues they would be willing to attend a workshop to resolve
39 (hereafter “Workshops”). A qualitative content analysis using inductive coding for each question
40 meaningful themes from the text replies, at three levels of increasing abstraction (lower and higher
41 categories, general themes).

42 **Participants/materials, setting, methods:** The final sample comprised 526 respondents (8.9%
43 participation rate). Respondents were predominantly clinicians (41.3%, n=216) or embryologists
44 (35.5%, n=186) from European countries (73.0%, n=386).

45 **Main results and the role of chance:** The number of replies generated for each question was
46 1421, 1208, 907 for the “Work Stressors”, “Perceived sources of difficulties” and “Workshop”
47 questions, respectively. The most often reported higher order categories of Work Stressors were:
48 ‘Time & Workload’ (61.6%, e.g., time pressure), ‘Organisation, Team & management issues’
49 (60.4%, e.g., team conflicts) and ‘Job content and work environment’ (50.3%, e.g., burdensome
50 administration). For “Perceived sources of difficulties” these were: ‘Patient-related sources’
51 (66.7%, e.g., unrealistic expectations), ‘Communication & Counselling with patients’ (33.7%, e.g.,
52 strained information-giving) and ‘Misinformation and lack of knowledge’ (27.8%, e.g., Dr. Google).
53 Finally, the topics participants would be willing to address in Workshops were: ‘Communicating
54 and Counselling with Patients’ (24.9%), ‘Dealing with Patient-related sources’ (19.6%) and Clinical
55 topics (19.6%). Three general themes emerged. First, a theme of ‘time and time trade-offs’
56 expressed the oft-mentioned need to trade-off time spent on one activity (e.g., managing patient
57 demands) against another activity (e.g., clinical workload, administration) with stress level
58 dependent on the efficacy of trading-off. Second, the theme of ‘multifactorial causes’ of
59 challenging patient interactions that embodied the many sources of difficulties working with
60 patients. What staff would be willing to address in workshops was indicated by the final general

61 theme of ‘a little of everything’, which linked to the need for multiple workshops addressing the
62 multi-factorial nature of challenges in fertility clinics.

63 **Limitations, reasons for caution:** Only about 10% of members receiving the survey participated.
64 The work was limited to the stressful and difficult aspects of working in fertility clinics, which may
65 give a more negative impression than if questions about the rewards and benefits had also been
66 included.

67 **Wider implications of the findings:** The nature of stressors and difficulties of working in a
68 fertility clinic are consistent with models of occupational stress and patient complexity. Specialised
69 psychologists, management consultants and other occupational experts could assist fertility teams
70 in overcoming many of the challenges. More research is required on the effect of encountered
71 work stressors and perceived sources of difficulties in working with patients on staff and patient
72 outcomes.

73 **Study funding/competing interest(s):** None declared.

74

75

76 Introduction

77 The Integrated Approach to Fertility Care proposes that taking account of the needs of
78 fertility clinic staff could have benefits on patient quality of life and compliance in fertility clinics
79 because patients and staff have reciprocal influences on each other's wellbeing as shown in other
80 areas of health (Boivin et al., 2012). According to the cognitive model of stress and coping, stress
81 occurs when there is a perceived imbalance between the demands of the situation and the
82 resources (e.g., personal, social, financial, etc.) available to manage these demands (Lazarus &
83 Folkman, 1984). This perceived imbalance converts demands into stressors and produces stress
84 reactions. Two work stressors in health contexts are high demand-low control working conditions
85 (e.g., excess workload and responsibility, role conflict) (Henry & Evans, 2008) and challenging
86 patient interactions (e.g., emotive exchanges, demanding, poor response) (Peek et al. 2009; Loeb et
87 al., 2015). Stress reactions at work are referred to as occupational stress. Occupational stress can
88 manifest in negative emotions (e.g., feeling tense, Albini et al., 2011), physical stress (e.g., chest
89 pain, Kuper et al. 2002), behavioural problems (e.g., disruption in sleep, Greubel & Kecklund,
90 2011) and loss of job satisfaction or motivation (Carpenter et al. 2003) all of which can contribute
91 to lower wellbeing in staff. A review of 18 studies showed that poorer doctor wellbeing was
92 associated with higher likelihood of doctors delivering suboptimal care (e.g., inadequate discharge,
93 omitting relevant diagnostic tests, medication errors) and lower likelihood of delivering better
94 quality care (e.g., providing relevant procedural information, more open with patients and more
95 attentive to psychosocial aspects, not over prescribing) (Scheepers et al., 2015). In contrast, higher
96 doctor wellbeing was associated with higher patient satisfaction and better compliance. From these
97 results, Scheepers et al. (2015) argued that stress reactions impact healthcare provision and patient
98 outcomes because medical staff with less stress and more positive emotions has more energy and
99 mental resources to direct their full attention to patients. Identifying sources of occupational
100 challenges in fertility clinics is therefore a first step to studying staff wellbeing and, in due course,
101 its effect on patient outcomes in fertility clinics.

102 One could expect that work challenges encountered in other health domains would
103 transfer to the fertility clinic context (as patients are patients). However, replication is useful to
104 determine whether similar problems occur in a health domain and to motivate further research and
105 action to address work challenges. Not much is known about staff stressors in fertility clinics. In a
106 survey study, Harris and Bond (1987) found that UK doctors performing in vitro fertilisation
107 (IVF) in the National Health Service reported more anxiety than non-IVF doctors. The main
108 stressors reported were high workload and time pressure, fear of making mistakes and accepting
109 the low success rates. However, the Harris and Bond study was conducted more than 25 years ago

110 and its findings may no longer be relevant to present fertility healthcare teams. In another survey
111 of 112 fertility clinics in the USA Gerson et al. (2004) found that administrators and staff were
112 more likely than physicians to agree with the statement that the clinic environment was stressful.
113 However, the stressors contributing to these perceptions were not examined. To date it is not
114 known whether staff stress would also be associated with patient outcomes or healthcare provision
115 in fertility clinics. However, we do know that patients cite negative experiences of care as a reason
116 for discontinuing fertility treatment (Gameiro et al., 2012).

117 The study aim was to understand better the challenges of working in a fertility clinic. The
118 objectives were to identify the work stressors and sources of difficulties working with patients that
119 were perceived to make working in a fertility clinic demanding and which staff would be willing to
120 resolve. These data could inform future studies on staff wellbeing, its effect on patient outcomes
121 and development of occupational interventions to address work challenges in fertility clinics.

122

123

Methods

Design

125 We chose a qualitative analytic approach for several reasons. The lack of detail in prior fertility
126 studies (Harris & Bond, 1987; Gerson et al., 2004) made it impossible to generate a quantitative
127 structured survey listing a comprehensive list of specific sources of stress or perceived difficulties
128 working with patients encountered in fertility clinics. To generate a more detailed understanding
129 we therefore needed a qualitative approach. However, to ensure our understanding was broad,
130 comprehensive and inclusive we wanted many professionals from many clinics to participate,
131 which precluded using intensive qualitative designs (e.g., face to face interviews, focus groups) in
132 favour of the open-ended online survey we used.

133

Participants

135 The sample comprised 526 fertility clinic staff, members of the ESHRE able to understand
136 English. ESHRE membership was about 5902 members (C. Plas, personal communication,
137 December of 2012). The number of IVF clinics in Europe at that time was 1314 (Kupka et al.
138 2016).

139

Materials and procedure

141 ESHRE circulated an email inviting its members to complete the survey by clicking the
142 hyperlink in the email (distributed October 2010). The survey asked participants to indicate their
143 profession, country of practice and to allocate a percentage of work hours to specific activities (i.e.,

144 clinical/laboratory, clinical/patient care, administration, teaching, and research duties) to a
145 maximum of 100% work time. The survey asked respondents about the top three factors that
146 made (a) their work stressful (hereafter “Work Stressors”) and (b) working with patients difficult
147 (hereafter “Perceived sources of difficulties”), and to state (c) for which of these factors they
148 would be most willing to attend a workshop to resolve (hereafter “Workshop”). These questions
149 were open-ended. The respondents typed in their reply in a text box that allowed an unlimited
150 number of characters. Participants had to click the ‘submit’ button for their responses to be
151 recorded. The study received ethical review and approval from the School of Psychology Ethics
152 Committee, Cardiff University.

153 154 **Data Analysis**

155 A total of 532 participants submitted their survey but data screening showed that five
156 responses were invalid due to significant missing data and one being a duplicate (final N=526).
157 Content analysis within a grounded theoretical framework was used for textual analysis according
158 to Silverman (2006) and Henwood and Pidgeon (1992). Respondents could name up to three
159 factors to each question (i.e., Work stressors, Perceived Sources of Difficulties, Workshop),
160 meaning that each participant could contribute up to nine replies to the group data. The first step
161 in the analysis was to check that each reply had text that could be coded. Inductive coding was
162 then applied to each question separately, using only replies to that question. Specifically, two
163 independent researchers analysed the replies and extracted ‘lower-order categories’ that expressed a
164 similar concept or meaning (e.g., ‘lack of time’, ‘time shortage’). A reply could contain more than
165 one lower-order category (maximum of two). This inductive coding was continued until no new
166 lower-order categories emerged for that question, and all replies were fully coded with the derived
167 categories (data saturation). In the next step, the researchers grouped thematically related lower-
168 order categories into more abstract ‘higher order categories’ through similar inductive coding. A
169 ‘general theme’ for each question was then generated from the lower and higher order categories
170 and their relation to each other, which expressed the overarching idea to emerge for that question.

171 To assure trustworthiness of data analysis two researchers coded the data. The two coders
172 reviewed and discussed their coding until consensus was reached or it was clear that consensus
173 could not be achieved. Emergent codes were presented to the broader research team for clarity of
174 names and labels. Inter-rater agreement was assessed using Kappa coefficient. Kappa coefficients
175 for agreement on lower order categories between the two coders were: 0.79 for Work Stress, 0.89;
176 for Perceived sources of difficulties, and; 0.89 for Workshops. For agreement on the higher order
177 categories Kappas were: 0.96 for Work Stress; 0.94 for Perceived sources of difficulties, and; 0.94
178 for Workshops.

179 All textual replies were entered in Statistical Package for Social Sciences (SPSS).
180 Descriptive statistics were used to provide frequency of respondent characteristics and of
181 categories. Respondents were coded as having 'ever mentioned' a category when the category
182 code was assigned to any of their replies for the question.

183
184
185
186

Results

187 The participation rate was 526/5902 (8.9%). Table I shows sample characteristics. The
188 number of replies for each question was: Work stressors (Q=1421), Perceived Sources of
189 Difficulties (Q=1208) and Workshop (Q=907). Due to space constraints only key findings and
190 illustrative quotes are presented in Table II. Supplementary Tables I to III show all lower and
191 higher categories extracted for each question.

192

193 I. Work Stress: "What are the top three factors that make your work stressful?"

194 A total of 37 lower order stress categories emerged and these were grouped into 11 higher
195 order thematically related stress categories. Six participants reported not experiencing any stress
196 whereas 39.4% (n=560/1421) of replies referred to multiple lower order categories (i.e., types of
197 stressors). The most frequently mentioned higher order stress categories concerned 'Time and
198 workload' (assigned to 61.6% of the sample), 'Organisation, team and management issues' (60.4%)
199 and 'Job content and work environment' (50.3%). Table II presents illustrative codes for these
200 categories (see Supplementary Table I for all categories). The general theme to emerge from the
201 analysis of work stressors was labelled "Time and time trade-offs". Lack of time and a high
202 workload meant participants had to prioritise tasks and make trade-offs especially between
203 administrative duties versus clinical duties or patient care ("*Important administrative work - difficulty to
204 be up-to-date*"; "*Due to much of administration, always running out of time in the out patient clinic hours*"; "*You
205 know from the literature that you can do a lot of psychological care for infertile couples but often you haven't the
206 time*") or multi-tasking ("*Interference of administrative tasks during laboratory work. Both cannot be completely
207 separated in time*").

208

209 II. Perceived sources of difficulties: "What are the top three factors that make working 210 with patients difficult?"

211 A total of 34 lower order categories were generated and grouped into 12 thematically
212 related higher order categories. About 4% of participants reported not having any difficulties
213 working with patients. In total, 11.6% (n=140/1208) of the replies were coded with multiple lower

214 order categories (i.e., different sources of perceived difficulties). The most frequently mentioned
215 factors that made working with patients difficult related to ‘Patient-related sources (assigned to
216 66.7% of the sample), ‘Communication and counselling’ (33.7%) and ‘Mis-information and lack of
217 knowledge’ (27.8%). Table II presents illustrative codes for these categories (see Supplementary
218 Table II for all categories). The general theme to emerge from the analysis of replies under
219 ‘Perceived sources of difficulties’ was the “Multifactorial causes” of difficulties working with
220 patients’. Sources could be within patient, staff, clinic or externally (e.g., funding). The replies also
221 showed clinic staff providing fertility services despite the patient and system challenges they
222 perceived. Many replies gave a sense of repeatedly having to address the same problem (*“The*
223 *internet....much time spent explaining why we will not be carrying out a particular treatment which has an*
224 *unconfirmable 90%+ success rate”*), of trying to circumvent problems to provide best care despite
225 constraints (*“As IVF is a totally private profession ... the patients are under massive stress of the financial*
226 *burden ... reflects on us trying to make the best compromise we can”*) and sometimes feeling they fell short
227 of the standard they wished to provide because of these constraints (*“Their sorrow and sadness, and the*
228 *different ways of expressing that, and my shame of not being able to provide what they want”*).

229

230 **III. Workshops: “Which top three factors (of those reported for work stress/perceived** 231 **sources of difficulties) would you be most willing to attend a workshop to resolve”.**

232 A total of 33 lower order categories were generated from the replies and these were
233 thematically grouped into 13 higher order categories. Overall 18.1% of participants did not provide
234 an answer to this question. Of those who provided an answer, a small proportion (1.3%) said they
235 did not believe a workshop could resolve the challenges they faced. Only 9.5% (n=86/907) of
236 replies were coded with more than one lower order category (i.e., more than one workshop). The
237 most often cited workshops were for ‘Communicating and counselling with patients’ (24.9%),
238 ‘Dealing with patient-related sources (19.6%), and ‘Clinical topics’ (e.g., difficult cases, improving
239 performance or success rates, 19.6%). Table II presents illustrative codes for these categories (see
240 Supplementary Table III for all categories). The general theme from the ‘Workshop’ question was
241 ‘a little of everything’. Although there were small differences in the proportion of the sample that
242 endorsed particular workshop topics no one workshop topic dominated.

243

244

244 **Discussion**

245 The results show that fertility clinic staff perceives numerous work stressors and sources of
246 difficulties with patients. Two general themes emerged regarding challenges in the delivery of
247 fertility care. First, a high workload and consequent lack of time often required staff to make

248 difficult time trade-offs between important aspects of their job role (clinical versus administrative)
249 (i.e., “Time and Time-Trade-offs”). Second, staff had to be resilient to effectively provide and
250 maintain high quality care despite the multifactorial nature of causes leading to difficulties working
251 with patients (i.e., “Multifactorial causes”). Clinic staff expressed willingness to attend workshops
252 to resolve these challenges. The results support and extend those of past survey research (Harris
253 & Bond, 1987, Gerson et al. 2004).

254 The participating fertility healthcare professionals would be considered to have ‘high strain’
255 jobs because they perceived a high workload caused by factors outside their control (e.g., covering
256 duties for absent staff, too many patients, Karasek, 1979). The perceived difficulties in working
257 with patients were similar to the types of problems primary care experts refer to as ‘patient
258 complexity’ (Peek et al. 2009). This refers to a patient-related sources that interfere with care as
259 usual and that could result from medical complexity (e.g., poor response), socioeconomic and
260 mental health issues that exacerbate disease or its treatment (e.g., depression), or specific patient
261 characteristics and behaviours (e.g., unrealistic expectations) (Loeb et al. 2015). Additionally,
262 causes could emerge from factors inside the clinic (e.g., work planning) or outside (funding,
263 legislation). Together these challenges can be converted to stressors that produce stress reactions,
264 and affect staff wellbeing (Lazarus & Folkman, 1984). Staff that are concurrently experiencing
265 stress reactions in the workplace have less energy and mental resources for patients, which affects
266 patient outcomes (Scheepers et al., 2015). Specialised occupational psychologists and managers
267 could be consulted to address these challenges in workshops. The ESHRE psychosocial guidelines
268 directed at staff could also help manage some perceived sources of difficulties working with
269 patients (Gameiro et al., 2015). Addressing challenges in clinics could improve quality of life for
270 patients and staff and potentially patient outcomes. However, more research is required.

271

272 **Future research**

273 We view our results as the start of what we hope will become a productive avenue of
274 further research potentially leading to improved outcomes. Replication studies are needed to
275 confirm whether the most frequently mentioned work stressors and perceived sources of
276 difficulties are the most frequently encountered in fertility clinics and to examine further the
277 linkages and overlap between work stressors and sources of difficulties working with patients.
278 Further, replies suggest the need for better understanding of the perceived sources of problems.
279 For example, the replies “*When patients have difficulties in understanding doctor’s advice or following the rules*
280 *of the treatments plans*” could mean the patient is uneducated, staff is not skilled at providing
281 understandable information, or both have difficulty reaching equilibrium in a shared decision-

282 making context. The category “patient demand” emerged as a lower order category to the work
283 stressor question (e.g., “*inability to have all patients achieve their pregnancy...*”) and the perceived sources
284 of difficulties with patients question too (e.g., “*patients are more and more demanding and unable to accept*
285 *failure ...*”) but the interplay between these is not understood. Research on patient complexity in
286 primary care is more advanced and should be consulted (Loeb et al. 2015). Once the causes of
287 work place stress and perceived sources of difficulties in working with patients are better
288 understood, the next step is evaluating their (individual and cumulative) effect on staff wellbeing
289 and patient outcomes and developing tailored interventions to modify causes.

290

291 **Strengths and limitations**

292 Online data collection allowed us to obtain textual data of a large international sample of staff
293 from many clinics stating their views in their own words (> 500). However, participants
294 nevertheless represented only 8.9% of ESHRE members (5902 members) suggesting possible
295 selection bias. It is unknown how many clinic staff are members of ESHRE. If each clinic in
296 Europe (1312 at time of survey, Kupka et al. 2016) was equally represented at ESHRE and in our
297 survey then it would be about 4 to 5 members of staff per clinic being ESHRE members, and
298 about 40% of clinics represented in the survey. The survey was in English and the need to
299 communicate complex issues in a secondary language could explain low participation. Due to
300 unforeseen circumstances, the time interval between data collection ending and the start of analysis
301 was longer than expected (5 years) but we believe our data remain relevant. First, our data on
302 stressors and difficulties were similar to those recently reported in anecdotal work (Grill, 2015).
303 Second, the topic is discussed in on-going initiatives that prioritise communication and human
304 resources in fertility clinics (ESHRE “Management of Fertility Units”, 2010). We did not report
305 on differences according to occupational role due to lack of space but a cursory look suggests
306 challenges are consistent with job role. For example, embryologists reported more stressors related
307 to quality control (e.g., handling human material) than other staff. Another issue arising from
308 using a single language was that errors in spellings or grammar made the interpretation of textual
309 data difficult. Given the interpretive subjective nature of content analysis and this issue
310 specifically, several researchers coded the replies. Overall inter-rater reliability was satisfactory
311 increasing the trustworthiness of the findings. Nevertheless, replication in multiple languages is
312 warranted. Finally, future studies should examine the positive elements of working in fertility
313 clinics and explore their effect on staff quality of life and patient outcomes.

314

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316 Petra Thorn for reviewing the survey questions. China Harrison for second coding and preparing
317 the tables. European Society for Human Reproduction & Embryology for being willing to
318 distribute to its membership the hyperlink to the study.

319

320 **Authors' Roles**

321 JB was the lead researcher on the study, which included conceptualising and designing the study,
322 data collection and analysis, preparation and revision of manuscript. LB assisted with design of
323 study, data collection and analysis, preparation and revision of manuscript, EK assisted with
324 qualitative analysis and interpretation and revision of manuscript. Chin ieng U carried out second
325 coding and used these data in an extended paper submitted for her health psychology thesis on this
326 topic. CV assisted with data interpretation, preparation and revision of manuscript.

327

328 **Study Funding**

329 None declared

330

331 **Competing Interest(s)**

332 None declared

333

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386

387

1 Table I Participant characteristics (N = 526*)

2

Type of Profession	Study		ESHRE Membership**	
	%	n	%	n
Clinician	41.3	216	45	2999
Embryologist	35.5	186	22	1431
Basic scientist / researcher	6.3	33	11	730
Other	2	10	5	363
Resident/student	0.8	4	5	340
Lab technician	1.3	7	4	263
Nurse	6.9	36	3	203
Psychologist/counsellor	2.1	11	1	81
Midwife	1.5	8	1	79
No occupation provided	0	0	1	71
Company representative/administration	2.3	12	1	47
Pharmacist	0.2	1	0	9
Work allocation (mean % work time, SD)	Mean	SD		
Clinical/patient care	35.2	30.3		
Clinical/laboratory	24.3	29.5		
Administration	21.0	20.7		
Research	12.3	17.3		
Teaching	8.0	10.5		
Region of residence	%	n		
Europe	73.0	384		
Americas	13.7	72		
Asia	6.8	36		
Africa	3.8	20		
Oceania	2.7	14		

3 Note. *Two respondents did not provide data on all characteristics. SD=standard deviation

4 Note. **Membership figures for 2015 provided by ESHRE. N=6616

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8 Table 2
 9 Most frequent challenges encountered by fertility clinic staff related to work stressors and
 10 perceived sources of difficulties, and those that could be addressed via workshops

Question	Higher order category	Illustrative replies
Work Stress	Time and workload	“[I am] trying to achieve daily work duties in an 8 hour day and trying to avoid overtime” “Restriction of time in patient-doctor contact”
	Organization, team and management issues	“The need to work as a good team. I think we do not reach it that much” “Bitching – interpersonal conflicts”
	Job content and work environment	“When several patients...in one time are entering...for ovum pick-up” “Work not well structured and organized”
Perceived Sources of Difficulties	Patient-related sources	“IMPATIENCE: patients who demand immediate feedback to emails or calls ...etc.” “Even though you inform them [patients] of their true chances of success they tend to believe we are miracle workers”
	Communication & counselling with patients	“To tell bad news. No material, no fecundation, no pregnancy” “Patients' religious beliefs that are inconsistent with clinic policies”
	Mis-information and lack of knowledge	“When patients have difficulties in understanding doctor`s advice or following...treatments plans” “Bad information by Doctor Google and press”
Workshops	Communicating & counselling with or about patients	“Bad communication between physicians-biologists-nurses concerning cases” “Motivating patients for psychological...relational counselling... when they want a medical solution and there isn't one”
	‘Dealing with patient-related sources’	“Husband's unwilling to fully cooperate” “Patient’s...more and more demanding...and our lab does not have the time or means to be able to easily meet those demands”
	Clinical topics	“Pregnancy rates and keeping them competitive” “How to optimize patient care in a busy program”

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1 Supplemental Table I Factors that make working in a fertility clinic stressful ('Work Stress'),
 2 N=526
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Higher order category	%	n
Lower order category		
Time and workload		
High workload, workload issues	28.1	148
Lack of time, time pressure	23.1	122
Overtime work	7.4	39
Deadlines	3.0	16
Organisation, team and management issues		
Team work and team member conflicts	28.5	150
Organisation and management	18.4	97
Staff management issues (incl. lack of staff)	13.5	71
Job content and work environment		
Admin tasks (email, phone calls)	18.0	95
Work planning	9.5	50
Job responsibility/role	8.7	46
Work environment/condition (noise, space)	8.2	43
Research	2.5	13
Teaching/training staff and students	2.1	11
Unpredictable events, disrupted work routines	1.3	7
Clinical treatment		
Difficult cases (clinical, ethical, medical)	11.2	59
Treatment/lab results	9.5	50
Pregnancy success rate/treatment outcome	5.5	29
Treatment protocol	4.2	22
Patient needs		
Patient expectations & demands	8.0	42
Patient distress and anxiety	3.8	20
Patient issues	8.2	43
Economical and financial issues		
Finances (budget, funding)	9.1	48

Private centre issues	5.7	30
Insurance	1.7	9
Quality control		
Technological problems & lab practices	6.5	33
Quality control	3.6	19
Concentration and attention	2.5	13
Worry of making mistakes	1.7	9
Health and safety, risks	1.7	9
Handling human material	1.1	6
Legal aspects		
Legislation, policy, law	11.6	61
Other		
General personal issues	5.1	27
Other	3.4	18
Conflicts	.8	4
Communication & counselling		
Communication	6.3	32
Counselling & psychological support	0.8	4
No stress		
Reported 'none' or 'no stress'	1.1	6

- 4 Lower order categories subsumed under each higher order category (in bold) for replies to what
5 factors make working in a fertility clinic stressful ('Work Stress')
6 n= number of participants mentioning lower order category
7 %= percentage of total sample mentioning lower order category
8 Note: N does not add to 526 because respondents provided multiple replies.
9

- 10 Supplemental Table II Factors perceived to make working with patients difficult ('Perceived
 11 Sources of Difficulties'), N=526

Higher category	%	n
Lower order category		
Patient-related sources		
High patient expectations/demands & inability to meet patient need	30.0	157
Difficult and problematic patient characteristics	17.5	92
Patient negative emotion	12.9	68
Over-questioning by patients	2.1	11
Individuality & diversity of patient needs	2.1	11
Suspiciousness/lack of respect between patient and doctors	1.7	9
Changing patient lifestyle and behaviour	0.4	2
Communication and counselling with patients		
Communication and information giving	13.5	71
Culture and language barrier	8.6	45
Breaking bad news	7.8	41
Counselling and psychological support	3.8	20
Misinformation and lack of knowledge of patient		
Doctor Google	10.8	57
Lack of knowledge and education level	17.0	90
Clinical treatment		
Difficult case	12.0	63
Treatment failure	4.9	26
Pregnancy rate	2.5	13
Treatment protocol	1.7	9
Time pressure		
Time pressure	17.3	91
Job content and environment		
Admin issues	6.6	35
Work planning	5.7	30
Work environment (noise, space)	2.3	12
Unexpected events at work	1.1	6
Economical and financial issues		

Finances (budget, funding, cost of treatment)	13.3	70
Insurance	1.3	7
Other		
Other	9.7	51
Technological and instrumental problems	2.7	14
Andrology	0.6	3
Teamwork management and staff issues		
Teamwork issues	8.0	42
Staff emotion and psychological state	4.0	21
Organisation and management issues		
Organisation and management	5.9	31
Waiting list	0.8	4
Legal aspects		
Legislation, policies, law	5.3	28
No difficulty		
No difficulty	3.8	20

- 12 Lower order categories subsumed under each higher order category (in bold) for replies to what
13 makes working with patients difficult ('Perceived Sources of Difficulties')
14 n= number of participants mentioning lower order category
15 %= percentage of total sample mentioning lower order category
16 Note: N does not add to 526 because respondents provided multiple replies.
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19 Supplemental Table III Workshops staff would be willing to attend to resolve work challenges
 20 ('Workshops'), N=526

Higher category	%	n
Lower order category		
Communicating and counselling with patients		
Communication skills	9.3	49
Counselling and psychological support	8.0	42
Breaking bad news	5.7	30
Culture and language barrier	1.9	10
Dealing with patient-related sources		
Patient emotion	7.8	41
Patient expectations & demands	8.0	42
Difficult and uncooperative patients	3.8	20
Clinical issues		
Difficult case	6.8	36
Improve success rate	6.8	36
Improve clinic performance	4.2	22
Lab practice/technical skills	1.9	10
Treatment/diagnostic procedures	4.6	24
Post IVF care (ending treatment)	1.0	5
New treatments	0.8	4
Teamwork management and staff issues		
Staff relations & teamwork	14.4	76
Staff emotion and psychological state	4.4	23
Job content and environment		
Work planning/workload	6.3	33
Admin (non-medical) tasks	5.5	29
Work environment (noise, space)	2.3	12
Research	1.9	10
Unexpected events/incidents at work	1.0	5
Organisation and management issues		
Organisation and management	13.1	69
Other		

Other	11.4	60
Handling complaints	0.4	2
Staff education & training		
Health Education/external support	8.4	44
Medical education for staff	2.7	14
Time pressure		
Time management	9.9	52
Legal aspects		
Legislation, policies, law	6.1	32
Quality Control		
Quality Control	3.8	20
Health & safety	1.1	6
Economical and financial issues		
Finances (budget, funding, cost of treatment)	4.8	25
No difficulty		
Problem can't be solved by attending workshop	1.3	7
No workshop	3.6	19

21 Lower order categories subsumed under each higher order category (in bold) for replies to what
22 workshops staff would be willing to attend to resolve work challenges ('Workshops').n= number
23 of participants mentioning lower order category
24 %= percentage of total sample mentioning lower order category
25 Note: n does not add to 526 because respondents provided multiple replies.

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