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Psychological impact of caring during the COVID-19 pandemic on HIV nurses

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Title: The psychological impact of caring during the covid-19 pandemic on HIV nurses

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Abstract

The covid pandemic has created a set of unprecedented set of challenges for health care services and staff.

We conducted a national online survey of nurses employed to work in HIV services in England, Wales, Scotland and Ireland to establish how the covid-19 pandemic has impacted on professional quality of life of HIV nurses. Professional quality of life was assessed using ProQol.

132 completed the survey, 99 of whom completed the ProQoL scale.

Just over one in 3 were redeployed in the first pandemic wave dropping to one in 6 in subsequent waves. In multivariate analysis redeployment in both waves increased Burnout scores by nearly 10 points and decreased Compassion satisfaction scores by nearly 5 points, with no effect on Secondary traumatic stress scores.

A supportive workplace environment will have a key role in supporting the path to recovery.

Key messages

- Just over one in 3 of the HIV nurses in this survey were redeployed in the first pandemic wave dropping to one in 6 in subsequent waves
- Two in five reported a greatly increased workload within the HIV service in the first wave which was still reported by one in four in subsequent waves.
- Burnout scores were significantly higher in those who had been redeployed to front-line covid services as compared to those who had remained in the HIV service, with the highest scores in those who had been redeployed during both peak periods of infection.
- A supportive job environment and favourable personal factors is most likely to produce a beneficial path to recovery

Key words

PROQOL, HIV Nurses, Burnout, COVID-19

MeSH terms: HIV; Nurses; Burnout, professional; COVID-19; Quality of Life

Background

The World Health Organization declared the novel coronavirus (COVID-19) outbreak a global pandemic on 11th March 2020 (World Health Organization 2020) and called on nations around the world to take action to reduce transmission of infection. In the UK, national lockdowns were imposed in March 2020, October 2020 and again in January 2021 with the aim of controlling the spread of infection and reducing the number of covid-related hospital admissions which were threatening to overwhelm healthcare services.

Healthcare services faced an unprecedented set of challenges associated with the double burden of maintaining services whilst also caring for the large number of people hospitalised with severe infection. Intensive care and high dependency provision were expanded to cope with the increasing demand, with nurses, doctors and other healthcare workers being redeployed from other clinical services to work in those areas. Redeployed staff were expected to rapidly upskill and function effectively in unfamiliar surroundings without their usual professional support networks whilst coping with personal anxieties about risk of infection to self and family (Alharbi, Jackson et al. 2020; Nelson, Lee-Winn 2020; Que, Shi et al. 2020). Many were exposed to high risk of infection with inadequate protection whilst coping with increased volume and intensity of work (Iacobucci 2020).

In all outpatient facilities, including HIV services, routine work was scaled down to reduce the burden on hospitals. Services were required to cancel clinics and move to remote consultations using telephone or video calls wherever possible to reduce the amount of social mixing and reduce the spread of infection manage (Willan, King et al. 2020). The staff who continued to work in those areas had to manage those changes and adjust rapidly to new ways of working.

Professional quality of life has been defined as 'the quality one feels in relation to their work as a helper' (Stamm 2010) and is made up of the positive and the negative elements of compassion satisfaction and compassion fatigue respectively (Stamm 2010). Compassion satisfaction (CS) relates to the pleasure that individuals derive from being able to do the job well. For example, the pleasure derived from being able to help others, feel positively about colleagues or being able to contribute to the work setting or the greater good of society. Compassion Fatigue (CF) is characterized by emotional and physical exhaustion as a result of frequent exposure to trauma and complex patient stories which leads to desensitisation, diminished empathy or compassion for others (Joinson 1992). It is considered a specific consequence of the caring relationships with patients and families and considered to develop over time; a product of the prolonged effect of providing care for others (Stamm 2010). CF is understood as encompassing the two components of Burnout, and Secondary Traumatic Stress (STS). Occupational burnout generally refers to a response to a broad range of occupational stressors and chronic tediousness in the workplace. It is often characterized by symptoms such as emotional exhaustion, depersonalization, or a lack of personal accomplishment which usually have a gradual onset (Maslach, Schaufeli et al. 2001). The relationship between burnout and work-related factors has been demonstrated consistently with meta-analyses indicating significant relationships between job burnout and risk factors such as high job demands (e.g., workload, role conflict) or low job resources (e.g., control, autonomy at work) (Alarcon 2011; Lee, Ashforth 1996). Secondary Traumatic Stress is a negative feeling driven by fear and work-related trauma which may be direct (primary) or it may be secondary trauma caused by indirect exposure to traumatic events. The negative effects of STS may include fear, sleep difficulties, intrusive images, or avoiding reminders of the person's traumatic experiences.

The psychological impact on healthcare professionals of working during the pandemic has focused primarily on those working in front line services, caring for covid patients. For example, a cross-sectional web-based survey conducted in China in February 2020, approximately two months after the virus was first reported in that country, reported prevalence

of psychological problems in physicians, medical residents, nurses, technicians and public health professionals as 60.35%, 50.82%, 62.02%, 57.54% and 62.40%, respectively (Que, Shi et al. 2020). Similar results have been reported elsewhere (Shechter, Diaz et al. 2020). The psychological impact on a national HIV workforce who faced a range of different workplace pressures is unknown.

Aim

To establish how the covid-19 pandemic has impacted on professional quality of life of HIV nurses the United Kingdom and Ireland.

Methods

We conducted a national online survey of nurses employed to work in HIV services in England, Wales, Scotland and Ireland. We needed to calculate the size of the population because information on the number of nurses employed to work in HIV services is not routinely collected at national level. We consulted extensively with the National HIV Nurses Association and with the co-ordinators of HIV nursing networks which operate at a regional level in England and at national level in Scotland, Wales and Ireland, offering informal training and support, to establish details for as many services as possible. Using this information, we estimated the average number of nurses per HIV service to be three. We determined the number of HIV services to be approximately 183, based on previous information relating to services in England Piercy et al (2015) and local knowledge for the other four countries. These calculations gave us an estimated 550 HIV nurses in the UK.

The survey was administered using Qualtrics SP and consisted of three parts. The first part collected personal, professional and demographic information. The questionnaire began with demographic questions on age, gender and ethnicity, then collected number of years qualified, and number of years as an HIV nurse (Table 1). The next section collected workplace information: NHS pay band, number of hours worked per week, country within the UK, English region, type of HIV service, size of the HIV cohort, and number of HIV nurses in the service (Table 1).

The second part asked about working patterns and redeployment during two peak periods of infection, Feb – June 2020 and November 2020 – Feb 2021 when levels of hospital admissions and covid-related mortalities triggered national lockdowns. For each peak period, it asked about redeployment: where redeployed, nature of redeployment and length of redeployment. For those not redeployed, it asked about changes to HIV workload. The last part of the survey assessed professional quality of life using ProQOL 5.

ProQOL is a validated tool that measures the 3 domains of compassion satisfaction and compassion fatigue (Burnout (BO) and Secondary Traumatic Stress (STS)) by means of responses to 30 statements in a self-completed questionnaire (Stamm 2010). Each question asks about experiences, both positive and negative and respondents select how frequently, within the last 30 days, they have experienced the thing being described, on a five-point scale ranging from never to very often. Each domain consists of 10 questions with a possible score ranging from 10 to 50. The ProQOL instruction manual (Stamm 2010) details the scoring process and provides cut off scores 25th and 75th percentiles of accumulated testing results in based on a database of responses. For each domain: low is a score <22; medium a score of 22-41 and high for a score greater than 41.

The survey was piloted with five health and social care professionals who had worked through the Covid 19 pandemic and who were not HIV nurses. Their feedback confirmed that the survey was easy to complete and straightforward. Questions were clear with a good logical flow and they had no problems with interpretation. We made no changes to the survey in response to their feedback, other than slight formatting adjustments.

The survey ran for a three-week period 14th June - 5th July 2021. It was embedded in an invitation email which was distributed widely through regional HIV nursing networks and through the National HIV Nursing Association who sent it to all their members individually as well as promoting the survey on their website and through their social media presence on both facebook and twitter. The email included a request that recipients share the survey link with other nurses in their clinical teams and their HIV nursing networks. Reminders were sent at weekly intervals across all platforms.

Analysis

Stata v15.1 was used to generate basic descriptive statistics for all variables. Mean and standard deviation were calculated for each component score along with categories using the low, medium and high cut-offs. We present the characteristics of the original 132 respondents with the 99 who completed the ProQoL scale (see Table 1).

For the PROQOL descriptive and regression analysis, the scores for each domain were treated as continuous variables. Six respondents were missing the score for one item on the ProQoL and these responses were replaced with the mean of the item calculated from all the other respondents.

For the purpose of analysis, redeployment information was combined to indicate "redeployed in both", "not redeployed in either", "redeployed only once", or "missing".

To examine the effect of redeployment on ProQoL scores, the distribution of the domain scores were checked and a separate multivariate linear regression for each ProQoL domain were run. First screening all the explanatory variables individually, running multivariate analysis with all statistically significant variables in the screening, and finally using forward and backward testing to check for interactions. Statistical significance was set at $p=0.05$. Small numbers in the ethnicity category meant that it was reduced to white vs. "other than white" for these regressions. Further analysis added the category variables for the other domains to each domain regression. Only Burnout was affected by the scores from the other domains (Model 2 in Table 3)

Ethics

The project received ethical approval from the University Research Ethics Committee (Ethic Review ID: ER31499720)

Results

The survey process provided 143 respondents who started the survey, 6 didn't answer any questions, a further 5 stopped before completing the demographics section leaving 132 for the description of the respondents. A further 36 did not answer the ProQoL questions leaving 99 for the final analysis.

The overall survey respondents were primarily white, working in England, and female with more than one half qualified for more than 20 years. Approximately 70% worked full time and 80% worked in HIV outpatient services. The ProQoL subsample were essentially similar to the original respondents with only a smaller proportion of those qualified for less than 10 years in those who completed the ProQoL scale.

Table 1: Demographic and workplace description of the respondents in the initial cohort and the subset that completed the PROQOL

Variable	Original respondents (N=132)	Respondents that completed PROQUOL (N=99)
Ethnicity (N(%))		
White	118 (89.4%)	89 (89.9%)
Mixed/multiple	3 (2.3%)	3 (3.0%)
Asian/Asian British	2 (1.5%)	0
Black combined	8 (6.1%)	6 (6.1%)
Prefer not to say	1 (0.8)	1 (1.0%)
Male (N(%))	24 (18.2)	18 (18.2%)
Female	107 (81.1)	81 (81.8%)
Non-binary/third gender/Prefer not to say	1 (0.8)	0
Age band (N(%))		
20-29 y	10 (7.6%)	8 (8.1%)
30-39 y	22 (16.7%)	12 (12.1%)
40-49 y	43 (32.6%)	34 (34.3%)
50-59 y	50 (37.9%)	40 (40.4%)
60+ y	7 (5.3%)	5 (5.1%)
Number of years as a qualified nurse(N(%))	25 (18.9%)	
1-10 y	32 (24.2)	
11-20 y	75 (56.8%)	14 (14.1%)
20+		26 (26.3%)
		59 (59.6%)
Number of years as a qualified HIV nurse (N(%))		
1-5 y	36 (27.3%)	25 (25.3%)
6-10 y	26 (19.7%)	19 (19.2%)
11-15 y	11 (8.3%)	7 (7.1%)
16-20 y	21 (15.9%)	14 (14.1%)
20+	37 (28.0%)	33 (33.3%)
missing	1 (0.8%)	1 (1.0%)
NHS Payband (N(%))		
5	9 (6.8%)	4 (4.0%)
6	36 (27.3%)	27 (27.3%)
7	76 (57.6%)	61 (61.6%)
8	11 (8.3%)	7 (7.1%)
Number of hours worked per week (N(%))		
full time	97 (73.5%)	71 (71.7%)
< full time	35 (26.5%)	28 (28.3%)
Country (N(%))		
England	108 (81.8%)	81 (81.8%)
Scotland	14 (10.6%)	10 (10.1%)
Wales	3 (2.3%)	2 (2.0%)
Ireland (North & South)	7 (5.3%)	6 (6.1%)
Place of work (N (%)) HIV Outpatients		
In patient with HIV beds	104 (78.8%)	84 (84.8%)
HIV specialist community service	6 (4.5%)	1 (1.0%)
Other – please specify	17 (12.9%)	10 (10.1%)
	4 (3.8%)	4 (4.0%)
Size of HIV cohort (N (%))		
< 100	10 (7.6%)	5 (5.1%)
100-1000	64 (48.5%)	53 (53.5%)
1001-2000	14 (10.6%)	9 (9.1%)
2000+	44 (33.3%)	32 (32.3%)
Redeployment (N (%))		

Redeployed in both	21 (15.9%)	14 (14.1%)
Not redeployed in either	62 (47.0%)	58 (58.6%)
Redeployed only once	28 (21.2%)	27 (27.3%)
missing	21 (15.9%)	0
PROQUOL scores (mean (SD)) Compassion Satisfaction Burnout Secondary Traumatic Stress	N/A	37.6 (6.3) 26.2 (5.6) 22.6 (6.2)

PROQUOL categories (N(%))
Compassion Satisfaction
  Low
  Medium
  High
 	
Burnout
  Low
  Medium
  High
 	
Secondary Traumatic Stress
  Low
  Medium
  High
	N/A	
		
		0 (0%)
		73 (73.7%)
		26 (26.3%)
		
		32 (32.3%)
		67 (67.7%)
		0 (0%)
		
		47 (47.5%)
		51 (51.5%)
		1 (1.0%)

Just over one in 3 were redeployed in the first pandemic wave dropping to one in 6 in subsequent waves (see Table 2). Two in five reported a greatly increased workload in the first wave which was still reported by one in four in subsequent waves. Although, one in eight reported an unchanged workload in the first wave period increasing to 1 in 4 in the subsequent waves.

Table 2: Redeployment circumstances for those who completed PROQOL (n=99)

The questions refer to where they were working during the pandemic waves	Period 1 Feb-Jun 2020	Period 2 Nov 20-Feb 21
Continue working in normal place yes No	 62 (62.6%) 37 (37.4%)	 81 (81.8%) 18 (18.2%)

Situation during the pandemic wave
  deployed elsewhere in usual workplace
  shielding/working from home
  elsewhere in covid infrastructure
  Half inpatient HIV, half other
  Not redeployed
  Left the NHS (comment in wave 2)
	
	32 (32.3%)
	2 (1.5%)
	2 (1.5%)
	1 (1.0%)
	62 (62.6%)
	N/A
		
		13 (13.1%)
		2 (2.0%)
		0
		0
		81 (81.8%)
		1 (1.0%)

Where redeployed
  ITU
  High dependency covid ward
  Covid ward
  Non-covid ward
  Community service
  other
  Missing
  Not redeployed
	
	5 (5.1%)
	4 (4.0%)
	18 (18.2%)
	1 (1.0%)
	3 (3.0%)
	1 (1.0%
	5 (5.0%)
	62 (62.6%)
		
		2 (2.0%)
		2 (2.0%)
		8 (8.1%)
		0
		0
		1 (1.0%)
		5 (5.0%)
		81 (86.9%)

Screening of explanatory variables found only 3 to be predictive of the ProQOL domain scores: ethnicity (white vs other than white), redeployment status, and continuing to work in their usual workplace. In multivariate analysis redeployment in both waves increased BO scores by nearly 10 points and decreased CS scores by nearly 5 points, with no effect on ST scores. Being redeployed only once, halved the impact on BO scores but made little change to CS scores. Being "other than white" decreased BO scores by nearly 5 points. None of the variables predicted ST scores in multivariate analysis (see table 3).

Table 3: Linear regression of PROQUOL domains

variable	Compassion Satisfaction Coeff (SE)	Secondary Traumatic Stress Coeff (SE)	Burnout Coeff (SE)	Burnout model 2
White Other than white	Ref 2.40 (0.048)	Ref -3.19 (0.124)	Ref -4.89 (0.006)	Ref -3.35 (0.016)

Redeployment
  Not redeployed in either
  Redeployed only once
Redeployed in both
	
	Ref
	-4.85 (0.009)
	-4.92 (0.026)
		
		Ref
		0.34 (0.914)
		4.72 (0.211)
			
			Ref
			5.47 (0.039)
			9.98 (0.002)
				
				Ref
				3.93 (0.059)
				7.88 (0.002)

Continue working normal yes No	 Ref 3.17 (0.101)	 Ref -0.05 (0.986)	 Ref -3.96 (0.152)	 Ref -3.68 (0.088)

Compassion Satisfaction
  Medium*
  High
	N/A	N/A	N/A	5.47 (<.001)
				Ref

Secondary Traumatic Stress
  Low
  Medium
  High
	N/A	N/A	N/A	Ref
				3.25 (<.001)
				6.35 (0.127)

Constant	17.53	25.41		

- * No one scored low
- % No one scored high

Discussion

This survey was conducted in June-July 2021, a period of relative calm following three waves of covid-19 which had produced two extended episodes of intense pressure and increased workload on healthcare services. The mean ProQol scores were 37.6, 26.2 and 22.6 for the three domains of CS, BO, and STS respectively. The proportions recording moderate and high levels of compassion satisfaction were 73.7% (n=73) and 26.3% (n=26) respectively. Just over two thirds (67.7%, n= 67) of respondents recorded moderate levels of BO with the remaining scores being in the low category. Just over half (51.5%, n = 51) recorded moderate levels of STS and one person recorded a high level of STS.

Two surveys of frontline healthcare workers, conducted in the wake of the first wave of the pandemic reported similar findings. A survey of 705 healthcare workers in Iran who were working in close contact with COVID-19 patients found that almost all (98.3%) showed moderate to high levels of CS with the majority (76.6%) showing a moderate level of BO (Azizkhani, Heydari et al. 2021). In Spain, a survey of 973 healthcare professionals, conducted after the first wave of the pandemic to assess the situation when the pressure on services and work overload had eased, (Dosil, Ozamiz-Etxebarria et al. 2020). Additionally, a survey of 102 healthcare workers from two rehabilitation services in Italy during the first two months of the pandemic, reported that substantial proportions of those staff who were

not at the covid frontline had high compassion fatigue and burnout scores (Franza, Basta et al. 2020).

The vast majority of those re-deployed worked at the front line and will have had to adjust rapidly to an unfamiliar setting and function professionally in a situation that was fraught with uncertainties; a rapidly changing clinical environment with intense work pressures and during the early part of the pandemic in particular, exposure to high risk of infection with inadequate protection (Alharbi, Jackson et al. 2020; Nelson, Lee-Winn 2020; Que, Shi et al. 2020; Iacobucci 2020)This may account for the differences in BO scores we found between those who were redeployed and those who were not, given that BO is associated with high job demands or low job resources. The difference in BO scores between those redeployed once and twice is likely to be a standard dose response.

The proportion with moderate levels of CF and particularly of BO we identified in this workforce are of concern because of the potentially adverse consequences this may have for the wellbeing of the individual and the impact of this on HIV services. A substantial body of research evidences the physical, psychological and occupational consequences of job burnout (Salvagioni, Melanda et al. 2017) and STS is similarly considered to have long term implications. The impact may be ameliorated to some degree by the high levels of CS we found because CS is considered to serve a protective function (Cocker, Joss 2016). The regression analysis demonstrated that the levels of CS were associated with a reduction in BO scores supporting the idea that CS has a moderating or protective effect.

Efforts should be directed towards reducing the levels of CF although there is little good evidence to indicate how best to achieve this. There is a lack of evidence to inform how to intervene most effectively with health workers experiencing symptoms of STS (Bercier, Maynard 2015). There is also little evidence to suggest that individualistic interventions designed to aid recovery from BO are effective (Ahola, Toppinen-Tanner et al. 2017). The findings of Salminen, Andreou et al. (2017), who examined the trajectory of individuals on a BO rehabilitation programme offers some valuable insights. They highlighted the combined roles of work related and individual related factors in BO and in recovery. Drawing on their conclusions, high personal agency, reinforced by a supportive job environment and favourable personal factors is most likely to produce a beneficial path to recovery. Working to achieving this within the context of a continuing pandemic is highly challenging but may be imperative for the long-term sustainability of the HIV nursing workforce.

Strengths and limitations

The survey resulted in responses from 143 out of an estimated 550 HIV nurses (26%), which given the current working environment, was encouraging and indicated the effectiveness of our survey distribution strategy. A weakness was the substantial drop in responses for the ProQoL aspect of the study.

Conclusion

The survey of HIV nurses has provided important insights into the psychological impact of working during the covid pandemic. Higher levels of compassion fatigue were associated with redeployment during the peak period of infection. We identified these levels of compassion fatigue following the peak periods of infection and after staff had returned to their normal workplace. A supportive workplace environment will have a key role in supporting the path to recovery.

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