Work Productivity Impact across four types of cancer: Real-World Evidence

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Introduction and Objectives

- There were around 17 million new cancer cases worldwide in 2018 with the most common tumour areas being lung, female breast, bowel and prostate cancer[1].
- Patient employment and weekly hours worked reduce the most 6 months after a cancer diagnosis, and at 12 to 18 months post-diagnosis many patients return to work[2].
- Improvements in treatments are leading to growing numbers of cancer patients now working throughout their treatment.
- We assessed work productivity impact in different cancer types.

Methodology

- Advanced breast (ABC), head and neck (HNC), ovarian cancer (OC), and multiple myeloma (MM) patients' data were collected via the Adelphi Real World Disease Specific Programmes™ in EU5 and US between March 2017 and February 2019.
- Patient record forms were completed by physicians for their consulting patients. Data collected included patient demographics, clinical characteristics and treatment patterns.
- Physician inclusion criteria were:
  - ABC: Oncologist making treatment decisions for >2 ABC patients in a typical week;
  - H&N: Medical oncologist making treatment decisions for >9 advanced HNC patients in a typical month;
  - OC: Medical oncologist or gynaecologist that qualified between 5 and 35 years of data collection, making treatment decisions for >10 advanced OC patients on active drug treatment per typical month;
  - MM: Haematologist or haem-oncologist making treatment decisions for at least 3 MM patients receiving 1st line and 3 patients receiving 2nd line therapy per typical week.
- Patient inclusion criteria were:
  - ABC: Next 10 female patients with confirmed diagnosis of ABC, of which 3 also have HR+/HER2- ABC;
  - HNC: Next 8 patients with confirmed diagnosis of either locally advanced recurrent or distant metastatic HNC, must not have primary site of skin, salivary gland, nasopharynx, paranasal sinus or nose;
  - OC: Next 8 female patients with a histologically confirmed diagnosis of stage II-IV OC comprising of 3 patients on 1st line consolidation or maintenance drug treatment, 1 patient on 2nd line or later drug treatment having received bevacizumab at 1st line maintenance, and 4 patients on 2nd or later line of drug treatment having received platinum-based therapy at 1st line;
  - MM: Next 8 patients with confirmed diagnosis of MM comprising of 4 receiving 1st line and 4 receiving 2nd line or later therapy.
  - All patients received active drug treatment at time of data collection, were not involved in a clinical trial and were ≥18 years old.
- Patients were invited to complete a patient self-completion (PSC) form on a voluntary basis.
- PSC variables collected include the Eastern Cooperative Oncology Group (ECOG) and Work Productivity and Activity Impairment (WPAI) tools.
- Linear regression analysis, controlling for age, co-morbidities using the Charlson Comorbidity Index (CCI) and ECOG score, was used to predict how cancer type and stage impacted work productivity. Estimated marginal means are reported with covariates set at their mean values.

Results

- Data were collected from 2816 patients (ABC:944, HNC:214, OC:852, MM:806). Mean age was 64 years, 75% of patients had ECOG 0-1 and 45% of patients were of working age (<65 years) (Table 1). 90% of working age patients had stage III-IV disease (advanced) (ABC:100%, HNC:100%, OC:96%, MM:49%).
- In stage III-IV working age patients, 19% and 14% of patients worked full-time and part-time, respectively. Of the 67% of patients who were not in work, 21%, 25%, 14% and 7% of patients were on long-term sick leave, homemakers, retired and unemployed, respectively. There were differences across cancer types: more OC and ABC patients were homemakers, more MM patients were working full-time, and more HNC and MM patients were on long-term sick leave (all p<0.0001) (Figure 1).
- 59% of patients not working reported this was due to their disease, no differences observed by tumour type.
- In working age patients, regressions estimate mean overall WPAI was 41.8 for stage I, 23.0 for stage II, 50.1 for stage III and 45.0 for stage IV patients, respectively. WPAI was the highest in HNC patients across all stages. Absenteeism and activity impairment were the highest in MM patients. Presenteeism was the highest in OC patients (all models p<0.05 compared to base categories [stage=1; type=ABC]). Stage II patients generally experienced less activity impairment and overall work impairment.
- Patients reported a mean activity impairment of 42.3% (SD:24.75); no significant differences were observed between cancer types for patients of all stages, however, of those that were stage III and IV, activity impairment was lowest in ABC (mean=40.94; SD=25.82) and highest in MM (mean=53.80; SD=26.33) (p=0.0128).
- Regression results showed that disease type (OC and MM) and later stage (III and IV) were indicative of a higher activity impairment, an ECOG score of 3 was indicative of a lower activity impairment (Figure 4).
- Regression results for patients at stage I and II showed that an ECOG score of 1 was indicative of a higher overall work impairment and activity impairment. Stage II was indicative of a lower overall work impairment.

Conclusions

- Cancer type and stage impact work productivity and nearly half patients experience activity impairment.
- Over half patients stopped working due to their cancer.
- Despite advances in treatments, patients experience difficulties in their working life.
- Further investigation into the impact of stage and cancer type is needed to understand work and activity impairment in working cancer patients.

Table 1: Demographics and clinical characteristics of all patients

	Overall[1] (n=2,816)	Advanced breast cancer (n=944)	Advanced Head and Neck cancer (n=214)	Ovarian cancer (n=852)	Multiple Myeloma (n=806)
Age (mean, SD)	64.48 (10.54)	61.28 (11.64)	63.97 (8.89)	63.78 (8.94)	69.11 (9.51)
Patients of working age[2], n (%)	1,277 (45.35)	528 (55.93)	109 (50.93)	432 (50.70)	208 (25.81)
ECOG status, n (%)					
0	676 (24.25)	279 (29.62)	41 (19.16)	180 (21.77)	176 (21.86)
1	1,422 (51.00)	463 (49.15)	148 (69.16)	410 (49.58)	401 (49.81)
2	559 (20.05)	145 (15.39)	24 (11.21)	195 (23.58)	195 (24.22)
3	114 (4.09)	44 (4.67)	1 (0.47)	39 (4.72)	30 (3.73)
4	17 (0.61)	11 (1.17)	0 (0.00)	3 (0.36)	3 (0.37)
Current stage, n (%)					
Stage I	140 (5.06)	N/A[3]	N/A[3]	N/A[3]	140 (18.45)
Stage II	237 (8.56)	N/A[3]	N/A[3]	24 (2.82)	213 (28.06)
Stage III	901 (32.54)	204 (21.61)	11 (5.14)	280 (32.86)	406 (53.49)
Stage IV	1,491 (53.85)	740 (78.39)	203 (94.86)	548 (64.32)	N/A[4]
Employment status, n (%)					
Working full time	268 (9.56)	99 (10.51)	16 (7.66)	77 (9.04)	76 (9.50)
Working part time	188 (6.71)	71 (7.54)	18 (8.61)	70 (8.22)	29 (3.62)
On long term sick leave	290 (10.35)	124 (13.16)	41 (19.62)	64 (7.51)	61 (7.63)
Homemaker	478 (17.05)	189 (20.06)	16 (7.66)	214 (25.12)	59 (7.38)
Student	3 (0.11)	2 (0.21)	0 (0.00)	0 (0.00)	1 (0.13)
Retired	1,479 (52.76)	420 (44.59)	101 (48.33)	397 (46.60)	561 (70.13)
Unemployed	97 (3.46)	37 (3.93)	17 (8.13)	30 (3.52)	13 (1.63)

[1]Bivariate analysis (ANOVA and Chi-squared) between diseases all have p=<0.0001; [2]<65 years old, [3]No patients assessed due to inclusion criteria
[4]No Stage IV exists for MM

Figure 1: Employment status in stage III and IV patients <65 years old (n=1,145)

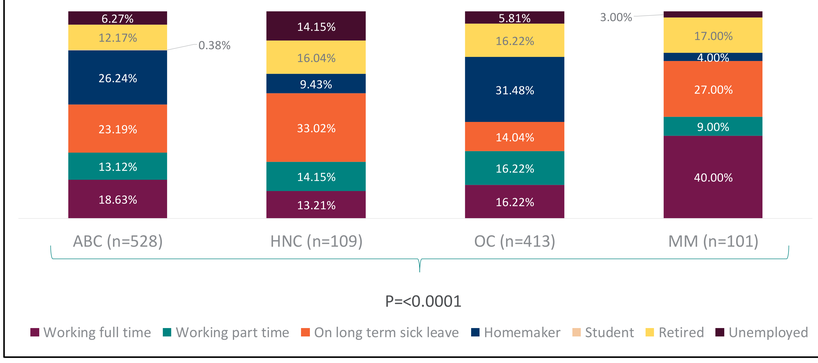


Figure 2: Estimated marginal mean values for WPAI overall work impairment by stage and type of cancer

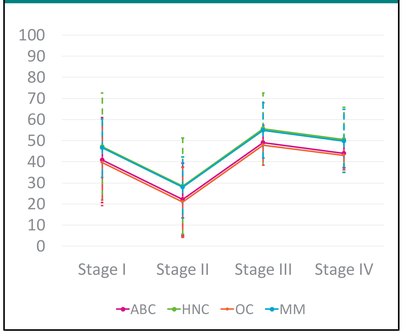


Figure 3: Estimated marginal mean values for WPAI activity impairment by stage and type of cancer

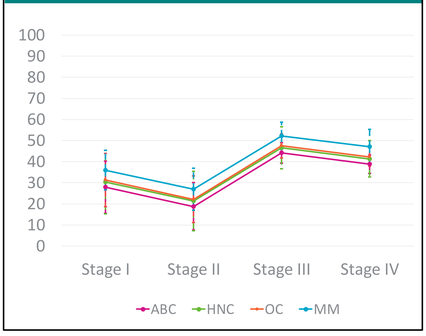
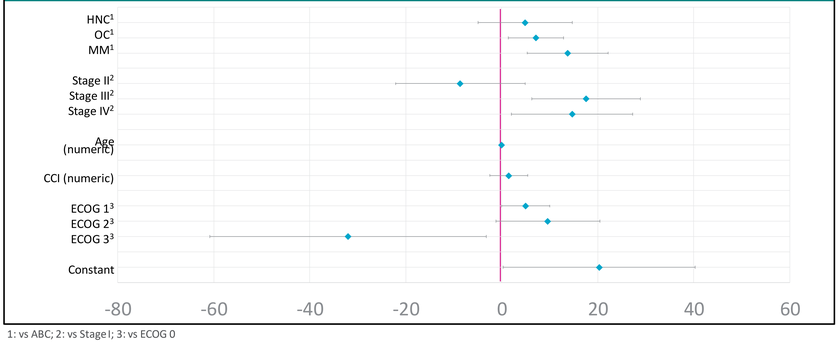


Figure 4: Regression for WPAI activity impairment (n=394)



1: vs ABC; 2: vs Stage I; 3: vs ECOG 0

References

1. Cancer Research UK. (2019). Worldwide Cancer Statistics. Available: https://www.cancerresearchuk.org/health-professional/cancer-statistics/worldwide-cancer#heading-ZeroXxxx. Last accessed 05.05.2020.
2. Bradley C J et al. (2007). Employment and Cancer: Findings from a Longitudinal Study of Breast and Prostate Cancer Survivors. Cancer Investigation. 25 (1), 47-54.

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