Real-world HRQL in patients with melanoma derived using a digital 'bring your own device' platform

Larkin J[1], Nuttall G[2], Cannon D[2], Au L[1], Spain L[1], Hunter N[1], Turajlic S[1], Nixon A[3], Kousoulakou H[4], Larkin M[4], Wiseman T[1]

[1]The Royal Marsden NHS Foundation Trust, [2]Melanoma UK, [3]Chilli Consultancy, [4]Vitaccess

BACKGROUND

Melanoma

Melanoma is an aggressive form of skin cancer that originates from melanocytes in the basal layer of the epidermis.

Although melanoma most frequently occurs on the skin[1], it can also arise in the mucous membranes of the mouth and genitalia, the respiratory, gastrointestinal, and uveal tracts and the leptomeninges.

Melanoma is the fifth most common cancer in the UK, with 14,509 new cases registered across the UK in 2014[2].

New treatments in melanoma are gradually transforming the disease into a chronic condition:

- For advanced disease stages, the median survival has significantly increased (from 9 months in stage 4 patients with limited treatment options, to a 3-year survival rate of up to 58%[3], with a proportion of them living to 5–10 years).
- In the early setting, adjuvant therapy is taking a prominent place in the therapeutic landscape, with many patients with normal life expectancies being exposed to treatments with potential side effects (some long term or irreversible).

The value of real-world data

Real-world data are vital to understand the impact of a chronic condition such as melanoma, and its treatments, on patients' lives, symptoms, functioning, work and other forms of productivity and daily activities, such as caring for a family.

The NICE methods guide[4] recommends collection of real-world data as a condition of entry into the revised Cancer Drugs Fund (CDF), to address uncertainty in technology appraisal.

In the real-world setting, data can be collected from a broader range of patients than is encountered in clinical trials, including those with co-morbidities and across all age ranges.

In the UK, melanoma patients are registered at the population level by one of the four National Cancer Registries and numerous regional melanoma registries; however, none of the existing UK registries collect health-related quality of life (HRQL) or patient reported outcomes (PRO) data. Furthermore, the CDF requires data collection over 24 months, which is often insufficient time to develop and extract data from a de novo registry, particularly using paper-based data capture.

The value of patient reported outcomes

Treatment is becoming increasingly patient-centred; regulators, HTA agencies and other healthcare decision-makers are increasingly interested in patients' experience of living with a condition and being treated for it, using measures which ask the patient directly.

PRO data, including HRQL, symptoms and daily functioning, are becoming increasingly important to provide an overall view of the burden of a disease and context to the potential value of treatment.

In many instances, PROs provide the most accurate and precise description of disease burden and the impact of treatment.

PROs are typically measured using instruments that have been developed for this purpose. These include disease-specific instruments designed to be used to measure outcomes in a specific indication such as the EORTC QLQ-C30, a measure of quality of life in cancer patients.

Whilst PROs are increasingly evaluated in clinical trials in some disease areas, they are considered less often in the real-world setting. Collection of PROs in the real-world has significant additional value compared with PROs measured within clinical trials. The data:

- are collected in "real-time"
- include different cohorts of patients, with co-morbidities that are not included in RCTs
- provide increased opportunity for patients to report symptoms difficult to capture on trial visits, such as daily burden of disease, diet and exercise
- demonstrate how a condition such as melanoma and its treatments affects patients in the long term.

The MyRealWorld™ melanoma registry

The Melanoma Registry has been developed in collaboration with the Patient Advocacy Organisation (PAO) Melanoma UK and the Royal Marsden NHS Foundation Trust (London).

The Registry records patient demographics, treatment patterns, AEs, ECOG performance status, diet and exercise, as well as monthly PRO data:

Using the study app on their mobile devices ("bring your own device" [BYOD] technology), patients complete EQ-5D-5L, EORTC QLQ-C30, and a melanoma-focused subset of the PRO-CTCAE. In response to patient consultation, a "symptom diary" tracking headache, abdominal pain, general pain, bodyweight, blood pressure and body temperature was also developed to enable daily tracking of most important symptoms.

Development of the app was informed by feedback from patients and Melanoma UK.

Patients with any type or stage of melanoma are recruited in collaboration with Melanoma UK.

The registry was launched at the end of October 2017.

Ethics approval has been obtained.

Informed consent is obtained electronically via the study app.

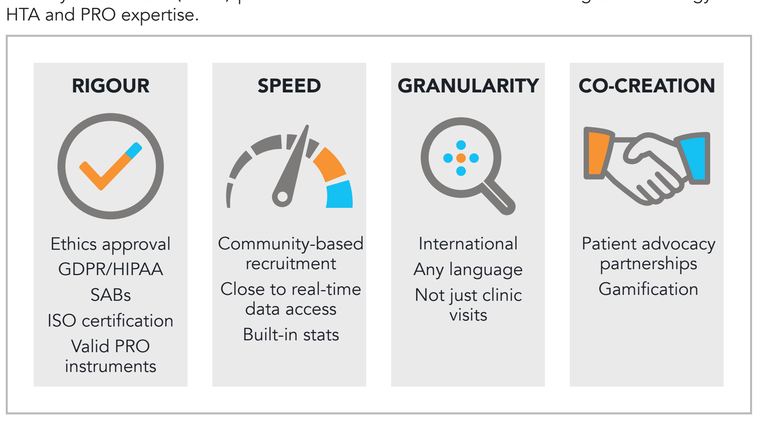
The study is fully GDPR compliant.

The study protocol has been registered with clinicaltrials.gov:

- ID NCT03379454
- Study title: The impact of melanoma and drug treatment in the real-world

MyRealWorld™ BYOD RWE platform

The MyRealWorld™ (MRW) platform combines the state-of-the-art digital technology with HTA and PRO expertise.



Patient recruitment & inclusion criteria

Patients are recruited in collaboration with Melanoma UK.

The patient inclusion criteria are broad to ensure that a wide selection of people is recruited:

- resident in UK; with NHS (or CHI) number
- current or previous diagnosis of melanoma
- age ≥18 years
- willing to use their own smartphone or tablet.

Study objective

- To analyse HRQL data collected in the real-world setting in patients with melanoma using the European Organisation for Research and Treatment of Cancer Core Quality of Life questionnaire (EORTC QLQ-C30) an oncology-specific questionnaire via a digital real-world evidence app, and to identify key determinants of HRQL.

METHODS

The app records the following set of data:

- Patient demographics
  - background questionnaire completed at baseline
  - collects demographic data, data relating to the diagnosis and treatment of their melanoma, and data relating to lifestyle (e.g. diet, exercise, alcohol intake, smoking)
  - patients are asked to update their information every 6 months
  - patients are reminded to complete their profile with app notifications
- Monthly PROs:
  - patients are asked to complete three PRO questionnaires (the EQ-5D-5L, EORTC QLQ-C30 and a melanoma-focused subset of the PRO-CTCAE) on a monthly basis
  - the present analysis is based on symptom burden recorded via the EORTC QLQ-C30 inst
- Daily symptom tracker
  - During development, patients requested a symptom tracker to enable daily recording of key symptoms – headache, abdominal pain, general pain, body weight, blood pressure, body temperature. Where possible, questions were based on validated items.

The present study focuses on the analysis of EORTC QLQ-C30 data collected through the app.

The EORTC QLQ-C30

The present study analysed symptom data collected via the MRW app with the European Organisation for Research and Treatment of Cancer (EORTC) QLQ-C30, a cancer specific instrument widely used in oncology across different types of cancers.

A melanoma-specific module of the EORTC QLQ-C30 (QLQ-MEL38) is in development (not fully validated at the time of registry launch, thus was not included in the study).

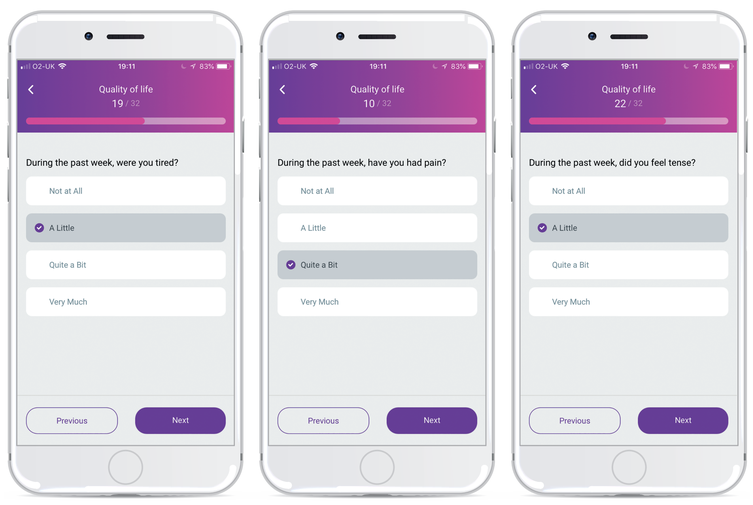
The EORTC QLQ-C30 incorporates[5]:

1. five functional scales (physical, role, cognitive, emotional, and social)
2. a global health status / HRQL scale
3. three symptom scales (fatigue, pain, and nausea and vomiting)
4. a number of single items assessing additional symptoms commonly reported by cancer patients (dyspnoea, loss of appetite, insomnia, constipation and diarrhoea) and perceived financial impact of the disease.

In the present study we focused on the analysis of (3) and (4).

Response categories for the symptom scales in the EORTC QLQ-C30 are as follows:

"Not at all"; "A little"; "Quite a bit"; "Very much"



RESULTS

Note: The results presented here are based on 73 registry participants who provided symptom burden and disease stage data from a total sample of 145 participants recruited at the time of the data cut.

325 participants are currently registered.

Patient demographics

Figure 1: Patient sample by stage

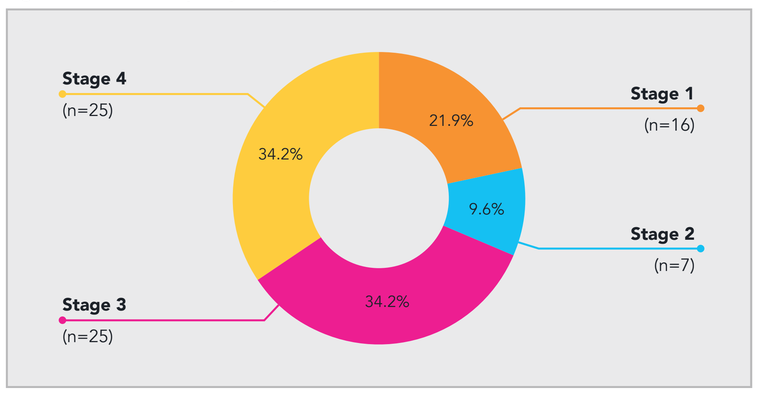
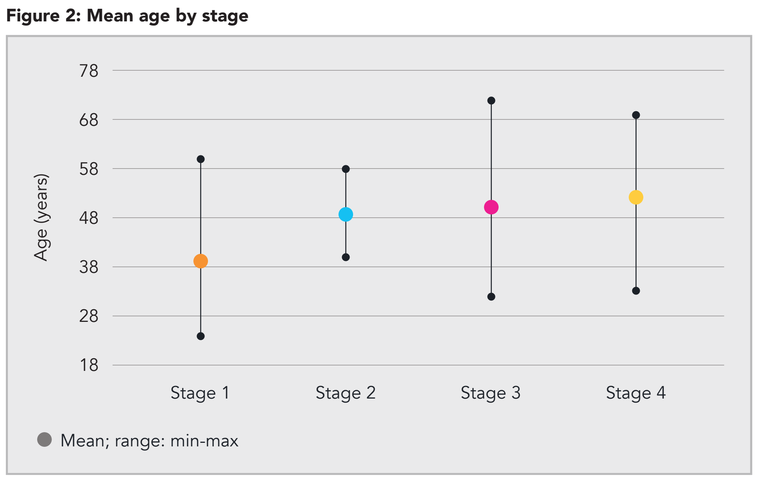


Figure 2: Mean age by stage

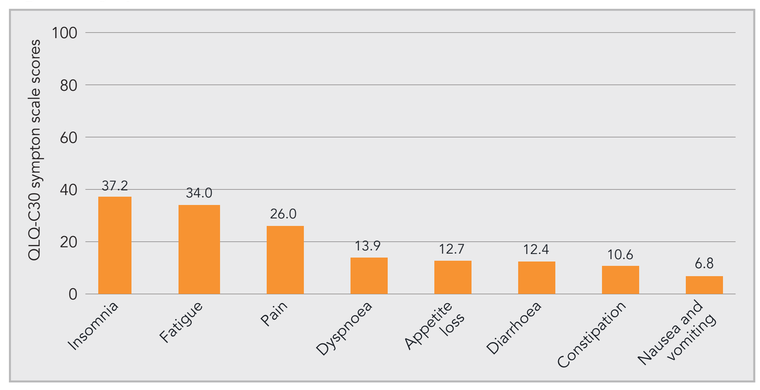


Note: The registry includes only adult patients, thus age of recruitment was 18

All scales and single-item measures range in score from 0 to 100

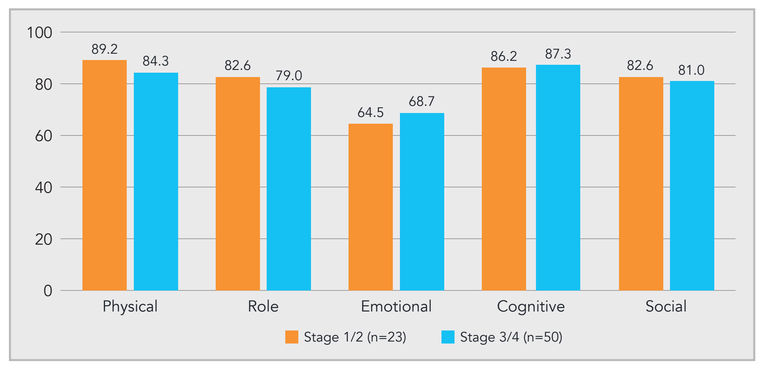
- A high score for a functional scale represents a high / healthy level of functioning
- A high score for the global health status / QoL represents a high QoL
- A high score for a symptom scale / item represents a high level of symptomatology / problems

Figure 3: Symptom burden



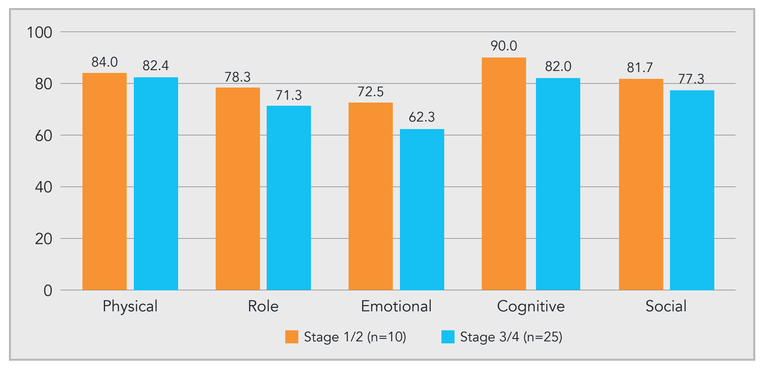
Of the symptoms measured by the QLQ-C30, insomnia, fatigue and pain stand out as the most burdensome Melanoma patients also report that dyspnoea, appetite loss, diarrhoea, constipation, and nausea/ vomiting are symptoms affecting their everyday activity and quality of life.

Figure 4: Mean functional scale by stage



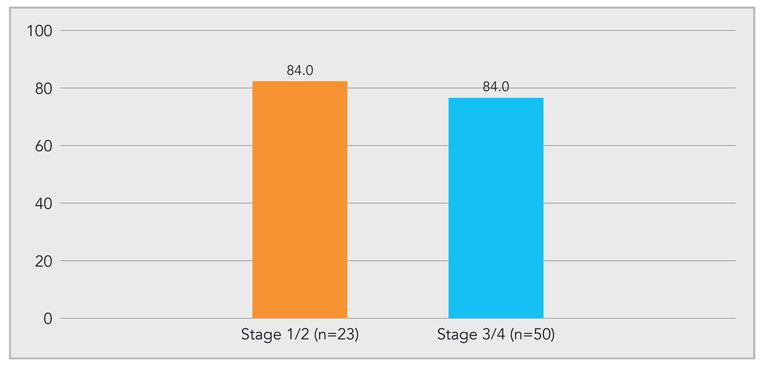
Patients with more advanced disease (Stage 3/4) have slightly lower physical, role and social level of functioning. Among the functional scales, scores were lowest for the emotional scale.

Figure 5: Mean functional scale by BRAF status



Patients with BRAF mutations reported lower levels of functional scales across all dimensions. The Global health status/ QoL scale is also lower in patients with BRAF mutations compared with patients without (70.7 and 73.3, respectively).

Figure 6: Global health status/ QoL by stage



The global health status/ QoL is lower in patients with Stage 3/4 compared with patients in Stage 1/2.

CONCLUSIONS

Mean EORTC QLQ-C30 global health status scores were lower in patients with more advanced disease.

Differences in symptom scales according to BRAF status were observed, with BRAF positive patients having lower Global health status/ QoL.

The symptom scales mostly affected by melanoma were insomnia, fatigue and pain.

Among the functional scales, scores were lowest for the emotional scale.

As melanoma treatment continues to evolve, data collected in the real-world setting in close to real-time will offer important insight to drug developers, health technology assessment agencies, clinicians and patients.

References

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