Forests, Human Health and Well-Being in Light of Climate Change and Urbanisation

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WHO defines health as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity”

The distribution of death and disease has shifted from infectious to chronic and non-communicable diseases which can likely be explained by urbanisation, aging and globalised lifestyle changes, such as reduced physical activity

Behavioural, social and mental health problems, such as depression are problems in all parts of the world
Key topics relating forests and human health

• Key issues:
  – forests provide food and medicinal products
  – forests as sources of diseases and other health problems
  – cultural beliefs and practices related to human health
  – environment-health links
  – governance and institutions

• Human health and well-being are affected by changes in forests, such as changes in the visual qualities of forests, changes in access to forests, changes in the flora and fauna of forests and changes in the ecosystem services that forests can provide
Positive health effects of forests

- Forests, and other green areas are a source for recreation that counterbalances a stressful and sedentary lifestyle
- Natural environments are visually preferred environments
- Visually attractive and preferred environments seem to promote good mental health because people are better able to face uncertainty and confusion when they are in pleasant environments
- There is a relationship between preferences and restorativeness, indicating that preference involves expectations of restoration
- Viewing nature induces positive impacts on physiological and cognitive functions, including reducing physiological stress and restoring the ability to focus attention
Negative health effects of forests in a changing climate

- Vector-borne diseases related to insects, invertebrates and ecto-parasites carried by mammals and birds can be found in forested areas
  - the projected rising temperatures related to climate change can extend the geographical areas affected by these diseases
  - the frequency of tick-borne, mosquito-borne and rodent-borne diseases is likely to increase with increasing temperatures
- Deforestation and forest degradation increase the vulnerability of forest-dependent people
  - e.g. through the reduction of food and medicinal plant species, higher incidence of vector-borne diseases
Health effects of nature – earlier reviews on research (1/2)

• There is quite a lot of research on preferences and experiences of natural landscapes and forests
• Research has focused on
  – psychological and psychophysiological effects of exposure to nature
  – connections between health and distance and accessibility of green space
  – the role of green space to promote physical activity
  – nature as a positive factor in pedagogic and therapeutic settings
Health effects of nature – earlier reviews on research (2/2)

• Knowledge gaps relate to
  – what types of outdoor environments are linked with which types of health benefits
  – why health benefits are different for different groups of people
  – how we should design and manage outdoor spaces to accommodate the needs of different groups of people
Increasing pressure on urban forests

• Within 30 years 2/3 of the world’s population will live in urban areas → increasing pressure on forest and green spaces within cities and surrounding areas
  – for recreational purposes
  – for development
• The amount of green space available also seems to affect health benefits gained from urban forests
  – a larger amount of green space close to residential areas often means a wider spectrum of forest types available, and hence a larger variation of daily recreational opportunities
  – the trend in urban planning is densification, which threatens the quality and quantity of green spaces in cities
Urban forests and human health

• Physical activity and exposure to nature are known separately to have positive effects on people’s health
  – natural environments, such as urban forests, seem to promote and stimulate physical activity
  – exercise in green environments also affects our mental health, e.g. by improving in self-esteem and mood disturbance

• Distance and accessibility are important for linking urban forests with human health and wellbeing
  – accessibility can be used to describe to what degree we are allowed to visit the area (e.g. legal accessibility) and to what degree different user groups face barriers and hindrances (e.g. wheelchair access)
  – most important are green spaces in the immediate vicinity (within 250 m) of residential areas, especially for children and elderly people
Urban forests as a provider of ecosystem services

- Urban forests, trees and green spaces have important ecological and biological functions affecting human health through e.g.
  - reducing soil erosion
  - conserving water
  - promoting ecosystem diversity
  - providing air filtration
  - regulating microclimate
  - reducing noise and as shield from visual disturbance
  - mitigating the urban heat island effect
  - rainwater drainage, flood control, sewage treatment
  - biodiversity enhancement
  - providing food (such as fruits and nuts)
Changes in forest structure, forest landscape preferences and human health

- The following forest components are sensitive to climate change: tree level processes, species distribution, site conditions, stand structure and disturbance regimes
  - species composition is an important factor shaping landscape preferences
  - changes in the stand structure can lead to denser forests with no overview
  - some changes are highly visual and will affect the way forests are perceived and consequently the health effects related to those perceptions
Disturbance regimes, forest landscape preferences and human health

- Wind, fire, droughts and hurricanes, heavy rainfalls and landslides can lead to increased tree mortality and loss of forest cover
  - people generally react in a negative way to disturbances, not only in terms of the visual effect, but also in terms of safety and accessibility
  - damages also affect the accessibility of forest areas and available trails and footpaths
  - early successional stages after such occurrences can also be dense and of lower value for recreation
Increasing focus on maintaining healthy urban forests

- There is need to develop appropriate decision support tools for analysing the contribution of urban forests to human health issues
- The negative effects of climate change on urban forests can be mitigated through forest management
- Monitoring programmes and tools for landscape analysis can help in identifying needs for intensive management or restrictions on use