

Variant group. The receptor-binding gene region appears to be very similar to that of the SARS-CoV and it is believed that the same receptor would be used for cell entry.<sup>17</sup>

## 4.1 Virion structure and its genome

Coronaviruses are structurally enveloped, belonging to the positive-strand RNA viruses category that has the largest known genomes of RNA. The structures of the coronavirus are more spherical in shape, but their structure has the potential to modify their morphology in response to environmental conditions, being pleomorphic. The capsular membrane which represents the outer envelope usually has glycoprotein projection and covers the nucleus, comprising a matrix protein containing a positive-strand RNA. Since the structure possesses 5'-capped and 3'-polyadenylated ends, it remains identical to the cellular mRNAs.<sup>18</sup> The structure is comprised of hemagglutinin esterase (HE) (present only in some beta-coronaviruses), spike (S), small membrane (E), membrane (M) and nucleocapsid (N), as shown (Figure 1). The envelope containing glycoprotein is responsible for attachment to the host cell, which possesses the primary anti-genic epitopes mainly those